The Economic and Social Consequences of Unemployment and Long-term Unemployment

Gaëlle Pierre

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University of Warwick, Department of Economics

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Declaration

This thesis is my own work and has not been submitted for a degree at another university.

Abstract

This thesis studies the economic and social consequences of unemployment and long-term (or repeated) unemployment. The first two chapters are concerned with economic consequences. They study how unemployment affects the working of the labour market. The last two chapters are interested in social consequences. They look at whether future generations' outcomes are altered by their parents' unemployment.

Chapter two uses data on UK regions over a period of 23 years to test the hypothesis that the composition of unemployment alters the dampening effect of unemployment on wages. Several specifications are estimated using dynamic panel data methods and are tested to check the robustness of the results. The hypothesis is verified for manual or unskilled workers, but not for non-manual or skilled workers.

The next three chapters use the British National Child Development Study (NCDS). The third chapter studies the job search behaviour of individuals who declared themselves unemployed and looking for work when aged 23 years old. We define job search as the combination of three decisions: whether they have considered applying for a job which would mean moving house, which would have a lower pay than their previous job, or which would require a lower qualification. We find that using a model that incorporates the dependence of these decisions improves efficiency. Young people who have been unemployed before are found to accept mobility but not to alter their expectations on wages and skill content.

In the fourth chapter, we want to determine whether the labour market situation of the parents influences in any way the social behaviour of children. The findings show that, controlling for - persistent - financial difficulties, the unemployment of the father during childhood seems to have a detrimental effect on his children's outcomes. There is some evidence that those who have a non-working mother during early childhood are better off than others, except in cases where the mother is single.

The last chapter draws on the previous one and studies whether these effects can be translated into unfavourable outcomes in adult life, in particular social exclusion. A new index of social exclusion is constructed. We find that anti-social behaviour and social difficulties during childhood are associated with later risks of social exclusion.

Chapter one

Introduction

This thesis studies the economic and social consequences of unemployment and long-term unemployment. In the past thirty years, the rates of unemployment across European countries have been persistently high. Although, as witnessed in the recent past, macroeconomic and labour market policies have eventually brought these figures down, a large number of people have known unemployment either by experiencing it directly or through their family members or friends. A whole generation of people born in the 1970s has been brought up with the background of fear of unemployment. Economies have seen the evolution of a dual labour market where the demand for unskilled people has apparently decreased sharply, and the demand for skills has increased; where the number of households where no adult works has risen at the same time as the number of households where all adults work; where certain geographical areas have been forgotten in times of recovery. The long period of economic difficulties has also led to the specific problem of social exclusion. The latter has become a major political issue in Europe and various governments have designed policies to try to integrate people. These measures include giving a subsistence level of benefit to anybody with insufficient income, but also measures aimed at improving life and giving a sense of community to people in disadvantaged areas.

Although short periods of unemployment can be seen as useful, enabling workers to find better jobs, the effect of repeated or protracted periods of unemployment can be damaging. The extent to which this is the case is not well known. There is evidence on the negative impact of experiencing unemployment, but there is no consensus regarding the longer-term effect of this experience. This thesis is interested in these long-term effects. One aim is to determine whether the attempts to intervene through active labour market policies and to alleviate unemployment are

justified and useful. Another is to attempt to understand what unemployment does to the unemployed and their families, in particular their children.

The thesis is organised as follows. The first two chapters are concerned with economic consequences. They study how unemployment affects the working of the labour market. The last two chapters are interested in social consequences. Acknowledging the detrimental impact of unemployment on the unemployed themselves, we look at whether these effects are transmitted to the children, that is, whether future generations' outcomes are altered by their parents' unemployment. If we find that such an effect does exist, the economic and social costs are potentially important. The social costs come from the inequality which would exist (and already exists to a certain extent) between people coming from less favoured families and the rest of the population. This situation would potentially lead to social unrest and social instability (which is evidenced by the effects of unemployment in certain suburbs or inner cities). The economic costs are linked to the activities of these "secondary citizens". The rest of the economy may suffer direct financial costs due to a higher level of crime and indirect costs due to lower human capital and foregone revenue from tax. The economy would potentially suffer lower growth and/or higher insecurity.

Although the first two chapters have a direct relation with economics, one may think that the last two chapters have as much to do with quantitative sociology as with economics. In recent years, research in economics has increasingly been taking into account the findings of other disciplines such as sociology, psychology, political science, etc. This seems a healthy process and it may bring depth to economics research. We consider that this thesis is part of this process, and, as we will show, has relevant implications for economics.

Chapter two uses data on UK regions over a period of 23 years to study the relationship between unemployment, long-term unemployment and wages. In particular it tests the hypothesis that the composition of unemployment (namely, the proportion of people unemployed for twelve months or more) alters the dampening effect of unemployment on wages. The chapter begins with a literature review on the topic. After identifying weaknesses in previous studies, we then provide our own analysis. Several specifications are estimated using dynamic panel data methods and are tested to check the robustness of the results.

The next three chapters use the British National Child Development Study (NCDS). This is a longitudinal survey of persons born between 3 and 9 March 1958 and living in Great Britain. Five waves of surveys were carried out when the studied person was 7, 11, 16, 23 and 33 years old. There is also information in 1978 on exam results. The first two waves consist of an interview with the parents, questionnaires completed by the school, results from a medical examination conducted by the school's health service and tests of ability of the subjects themselves. The third wave is basically the same, with the addition of an interview of the cohort members. The fourth wave consists of an interview with the cohort member. The fifth wave also contains such an interview as well as questionnaires for the partner of the cohort members and for cohort members who are mothers. Cohort members also have to fill in a calendar which covers the 10-year period between 23 and 33 years old.

The third chapter uses information obtained on individuals who declared themselves unemployed and looking for work in the 1981 wave, when aged 23 years old. We are interested in studying the job search behaviour of these individuals. We define job search as the combination of three decisions: whether they have considered applying for a job which would mean moving house, which would have a lower pay than their previous job, or which would require a lower qualification. The chapter

starts with a review of the relevant literature. We first estimate simple probit models and then, taking into consideration that these three decisions are interdependent, we use a trivariate probit model. The aim of this chapter is to identify the determinants of the flexibility or otherwise of unemployed people. In particular, we study whether past experiences of unemployment affect job search intensity.

In the fourth chapter, we are interested in the lives of the cohort members during childhood. We want to determine whether the labour market situation of the parents influences in any way the social behaviour of children. This question covers a range of topics and we first review the relevant literature. We include related findings from economics but also from other disciplines such as sociology and psychology. Social behaviour is defined by four outcomes. The first two are the reports of parents and of the school on the behaviour of the children. The third measures whether they have been in contact with the police by the age of 16, and the fourth whether they have been referred to a social agency for behaviour or educational problems. We first use the data set as a panel; the panel data methodology (fixed and random effects models) enables us to control for individual effects. The specification contains variables which are consistently observed in the first three waves of the NCDS. Because the number of variables available in such a way is limited, we also use simple cross-section probit models. The latter have each of the adolescent behaviours (at 16 years old) as dependent variables, and family background, personal characteristics, external and school factors as explanatory variables. Several questions are answered in this chapter. We study the extent to which the unemployment of the father and the employment of the mother are correlated with the social behaviour of their children, controlling for other possible factors. We also estimate what characteristics could offset these effects, for example, the extent to which the interest

of the parents in their child's education can counteract any possible detrimental effect of having an unemployed father.

The last chapter draws on the previous one and studies whether these effects can be translated into unfavourable outcomes in adult life. We are particularly interested in social exclusion. We first define what we mean by social exclusion. We measure social exclusion in a way which enables us to determine the risk of social exclusion as opposed to the risk of specific outcomes which, although they are often associated with social exclusion, do not necessarily indicate social exclusion on their own. It is hoped that by having a composite index of several outcomes, such an issue is avoided. We offer three ways of constructing our index of social exclusion and we verify that the main results are not affected by the method used. Our indices are naturally ordered discrete variables and we use ordered probit models to study their determinants. Our explanatory variables include family background measures, similar to those used in the previous chapter; we also include the anti-social behaviour variables, in order to check whether these have an effect; other controls are also included. We control for individual effects by including variables indicative of personal characteristics. We study whether the labour market situation of the parents has a direct effect on the probability that their children are socially excluded, and whether it has an indirect effect, through adolescent anti-social behaviour. We again ponder whether there are offsetting effects which could be enhanced to prevent any potential detrimental influence.

The sixth chapter draws conclusions from the work undertaken in the thesis and suggests areas for further research.

Chapter two

Does a Higher Proportion of Long-term Unemployment Really Increase Wage Pressure?

2.1 Introduction

The unemployment rate and general labour market conditions have an influence on the determination of wages. According to recent theories, the higher is the unemployment rate the lower are wage claims. These theories can be classified into three main groups (Blanchard and Katz, 1997). The first is based on bargaining between the firm and workers (Diamond, 1982): unemployment, or more precisely the exit rate from unemployment, plays a role in determining the relative power of the two sides. Second, in the efficiency wage models, the production function is determined not only by employment but also by the effort level of workers. The wage is kept above the market clearing level by the firm in order to prevent workers from shirking (Shapiro and Stiglitz, 1984), to attract high quality candidates (Weiss, 1980), to keep trained workers (Salop, 1979 and Stiglitz, 1974), or to obtain a higher effort level from them (Akerlof, 1982 and 1984). A higher unemployment rate then reduces the need for an "efficiency wage". Finally, the "competitive approach" is based on the idea that unemployment is voluntary and due to poor labour market opportunities (Blanchard and Katz, 1997). Labour market opportunities determine unemployment (or non-employment). This may be particularly valid for unskilled workers, for whom there is no question of efficiency wage. Their willingness to work depends on the difference between their reservation wage and the wage offered. If the opportunities are poor, they will prefer not to work at all and stay unemployed or out of the labour force. In that case, high unemployment is associated with low wages.

In recent years, however, the negative relationship between unemployment and wages seems to have weakened (Layard and Nickell, 1987). A popular explanation, first developed by Layard and Nickell (1986, 1987), and Nickell (1987), states that the composition of unemployment is important in determining its effectiveness in

reducing wage pressure. Layard and Nickell think that the increase in long-term unemployment incidence explains the failure of unemployment to keep the wage level down. Long-term unemployed people are less effective in looking for a job and employers may use their previous unemployment as a screening device. In effect, long-term unemployed people are 'absent' from the wage determination process so that a given level of unemployment is less powerful in keeping wages down. Such a phenomenon can easily be introduced in the theories mentioned above (Machin and Manning, 1999). This hypothesis has important policy implications: it suggests that policies directed at helping the long-term unemployed find jobs will have no inflationary pressures on wages.

Even though this explanation is intuitively appealing and often accepted as true, the empirical evidence gathered so far has not brought a consensus among economists. This chapter aims at providing a conclusive answer. It investigates the question taking into consideration the issues encountered in previous empirical studies. The results obtained show stronger support for the Layard and Nickell hypothesis than other evidence so far.

Section 2.2 presents a review of the literature and shows why the current evidence is not convincing. Section 2.3 introduces and justifies the specification that will be estimated. Section 2.4 presents extensive results and section 2.5 concludes.

2.2 The weakness of the evidence

Numerous authors have attempted to verify the Layard and Nickell hypothesis and this section provides an overview of their findings. The literature that is reviewed below is summarised in table A.2.1 in appendix A. Typically, the empirical analysis consists of checking the direction of the influence of the proportion of long-term

unemployment on wages. While the coefficient of unemployment is almost always found to be significant and negative in wage equations, results concerning long-term unemployment are sensitive to the specification chosen and the data used. The article by Nickell (1987) sets out the basis of the hypothesis developed by Layard and Nickell (1986). Nickell carried out a time series analysis and found that, other things constant (including the unemployment rate), the proportion of long-term unemployment has a significant and positive effect on real wages. Because of the strong relationship between the level of unemployment and the proportion of long-term unemployment, Nickell suggests that it is best to use the relationship between the proportion of long-term unemployment and unemployment itself. He expresses the proportion of long-term unemployment as a function of log unemployment, the level of unemployment, the change in the level of unemployment and the lag of the proportion of long-term unemployment. He then substitutes this into his initial wage equation, and develops a detailed explanation of the working of the effect of unemployment on wages. The effect of the level of unemployment is positive because of "the long-run tendency for the long-term unemployed proportion to rise with unemployment" (page 122). He finds a negative coefficient for the change in unemployment; this represents the fact that when unemployment increases the immediate effect is to decrease the proportion of long-term unemployment, so that unemployment has a stronger negative effect on wages. The logarithm of unemployment has a negative coefficient. This means that the unemployment effect is concave (at high levels of unemployment further unemployed people do not affect wage setting very much, as firms have no difficulty in finding replacements).

Although Nickell focuses on the composition effect of unemployment, certain authors (Machin and Manning, 1999) note that, because lags of unemployment

explain wages as well as the proportion of unemployment, this evidence remains inconclusive. Moreover, as Nickell notes in his paper, this study is quite limited because of the simplicity of the model and the usual problems of time series models.[1]

Following this paper, several authors have used microeconomic data to explore the issue. The relationship central to these studies is the "wage curve". The latter was developed by Blanchflower and Oswald (1990) and consists of a non-linear relationship between wages and local unemployment. Using a wage curve framework, they found that the coefficient of local long-term unemployment is not significantly different from zero. Their result questions the hypothesis of Layard and Nickell. However, they find a positive coefficient, which is the right sign for Layard and Nickell, and are cautionary about type II error. Blackaby and Manning (1990a) and Blackaby et al. (1991) argue that when they introduce regional prices the long-term unemployment effect reappears even in the wage curve specification. Blackaby and Hunt (1992), arguing that the non-linear terms are introduced in a "rather ad hoc way", develop a general model. They divide unemployment into its long-term and short-term components[2] and include them and their squares in their estimation. Their most successful equation is a wage curve in the short-term unemployment rates terms. This means that long-term unemployment has absolutely no effect in wage determination. However, unlike Blanchflower and Oswald, the latter two studies did not include regional dummies in their preferred specification so that a bias due to omitted variables may have existed. Moreover, the results seem sensitive to the type of price indices used (in particular to whether prices include housing costs or not).

These studies stay at the cross-section level so that dynamics cannot be

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[1] Nickell has only twenty-eight observations while he estimates equations containing between ten and twelve independent variables.

[2] Note that they take the long-term unemployment rate, not the proportion of long-term unemployment.

included. They also use individual or firm data on wages and other characteristics, together with regional or national measures of unemployment and long-term unemployment. There are a number of potential difficulties documented in the literature, notably those discussed by Moulton (1990). In addition to the usual econometric issues present in empirical studies (such as errors in variables, omitted variables bias, aggregation issues, etc.), Moulton identifies a particular bias due to the commonly made assumption that the disturbances are independent. He argues that units sharing an observable characteristic (region in the case of the wage curve) may also share unobservable characteristics that would lead the regression disturbances to be correlated. He finds that estimations including regional or industry unemployment and micro units have coefficients with too low standard errors, leading to possible spurious findings of statistical significance.

Subsequent studies have used microeconomic data (or regional or firm data) available over several years. The study by Jackman and Savouri (1991) provides an estimation across time and regions, and also the additional interest of being carried out for different groups of male wage earners.[3] Their results indeed vary according to the occupation of the employees. This is justifiable in the theory. The authors' findings indicate that the coefficients on the proportion of long-term unemployment are statistically insignificant and positive except when all (male) employees are considered. The results of the study lead us to think that this kind of differentiation should be undertaken when answering the question which interests this chapter. Nickell and Wadhwani (1990) use microeconomic data on firms to estimate a wage equation. They bring a fair level of disaggregation (using company accounts data) and

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[3] The groups are the following: all employees, manual employees, non-manual employees, manual employees in manufacturing, non-manual employees in manufacturing, manual employees not in manufacturing, non-manual employees not in manufacturing.

carry out an estimation over several years. However, when considering the question of the role of long-term unemployment, they used a national measure of long-term unemployment. Their support of the Layard-Nickell hypothesis is therefore in fact based on ten yearly observations. Graafland (1991) provides a slightly different analysis (for the Netherlands) which contradicts the same hypothesis. Using the rate of long-term unemployment rather than the proportion of long-term unemployment in total unemployment, he finds a negative coefficient on long-term unemployment in a wage equation.

Blanchflower and Oswald (1994) report results using the same data as Blackaby and Manning (1990a), but over a larger number of years. They do not find evidence in favour of the Layard-Nickell hypothesis. However, we note here that they use a specification including regional dummies, whereas Blackaby and Manning found supportive evidence for the Layard-Nickell hypothesis when using a specification excluding regional dummies. Blanchflower and Oswald (1994) also estimate a wage equation for Austria in which they do not find that long-term unemployment had a role in wage determination in addition to total unemployment, but they consider only two years and could not include regional prices although using nominal wages. Christofides and Oswald (1992) carried out estimations for Canada. They used data on wage contracts over a period of seven years. In view of the characteristics of the Canadian labour market, they define long-term unemployment as a spell of unemployment of six months or one year and at the level of the province. They again found no support for the Layard-Nickell hypothesis.

In their study of the US, Partridge and Rickman (1997) used the same definition of long-term unemployment as Christofides and Oswald (1992). They estimate wage equations using data at the state level. Partridge and Rickman use

several different methods of estimation on the same wage equation.[4] Even though the results are not robust for all of those, they conclude that overall their equations support the Layard and Nickell idea.

It is often argued (Blanchflower and Oswald, 1994) that the long-term elasticity[5] of wage to unemployment lies around -0.1. Table 2.1 is an attempt to summarise recent results. It shows that the long-term elasticity of wage to unemployment ranges from -0.21 (Blanchflower and Oswald, 1994b) to -0.01 (Jackman and Savouri, 1991). More importantly, Table 2.1 shows a striking result, suggestive of the long-term unemployment hypothesis being correct: the great majority of the studies reported positive long-term elasticities of wages to the proportion of long-term unemployment, even though several are insignificant. The calculated elasticities range from -0.066 (Blanchflower and Oswald, 1990) to 0.250 (Nickell and Wadhwani, 1990) and the median of this range is 0.048.

The Layard-Nickell hypothesis seems intuitively appealing: certainly, given the various difficulties that the long-term unemployed go through, it seems unlikely that their motivation and skills stay unaffected, and that employers do not pay attention to the duration of unemployment when recruiting, at least in periods of excess labour supply. However, as has been already mentioned elsewhere (Machin and Manning (1999)), the evidence presented so far does not appear to be convincing. We have shown that the results depend on the specifications chosen, and that several studies actually find that the proportion of long-term unemployment has a negative effect on wages. Nevertheless, the elasticities presented in table 2.1 suggest that, although many tests are inconclusive on their own, there are reasons to take the

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[4] The methods are ordinary least squares, two-stage least squares, fixed effects, and a fixed effects model correcting for autocorrelation.

[5] Throughout this paper, all elasticities referred to are long-term elasticities.

Layard-Nickell hypothesis seriously.

2.3 Data and econometric model

In order to study the relationship between the proportion of long-term unemployment and wages, we have constructed a panel data set for the UK (data sources are in appendix B). We consider that there is sufficient variation in regional unemployment and wages in the UK to be able to capture such a relationship. Moreover, such variations do not appear to be statistically significantly reduced or eliminated by migration, in particular for manual workers (McCormick, 1997). Such a panel gives us more degrees of freedom than time series analysis and provides more observations on unemployment than cross-section studies which use regional labour market variables. The closest study to our own is that of Jackman and Savouri (1991). However, they did not focus on the role of long-term unemployment and the composition of unemployment in wage determination.

2.3.1 Data

The regional panel covers the period 1973-1995 and ten regions.[6] All wage and labour market variables are for men; there are several reasons for this. First, reliable wage and unemployment data for women are available over a shorter period of time. Second, concentrating on men enables us to avoid the problem of gender effect on wages; women have complex participation behaviour which has evolved over the period considered.

We differentiate between manual and non-manual workers, because they are thought to participate in different labour markets. In particular, while non-manuals

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[6] These are the following: North, Yorkshire and Humbershire, East Midlands, East Anglia, South East,

compete at the national level, manuals seem to be confined to their region (McCormick, 1997). We use the hourly wage because it is thought that part of the adjustment to changes in the labour market situation is made through the number of hours worked. It is important to note that there may be underreporting of hours worked, as jobs with high responsibilities often entail unpaid overtime (in particular jobs with management responsibilities, i.e. non-manual jobs).

In this chapter, "long-term unemployment" means (except where otherwise stated) the proportion of long-term unemployment in total unemployment; it includes all men who have been unemployed for 12 months or more. Unemployment (and long-term unemployment) include all men whatever their occupation; we should take this into account when interpreting the results. House prices and building societies advances are respectively the average dwelling price and the average advance in pounds for all dwellings. Consumer prices relate to total consumer expenditures less housing. This represents the living costs for people who are not moving (taxation and compulsory state deductions are not included). The Reward Group reports the amount spent by each income standard in pounds. Each income standard is given a weight which we used to calculate total consumer expenditures (Cost of Living Report).

2.3.2 The general model

In the light of previous work, a two-way error component model seems the most appropriate specification to use in such a study. The time dummies take care of the influences that national variables could have in such a model. The region dummies catch the influence of other time invariant regional characteristics. The model consists of a reduced form equation:

South West, West Midlands, North West, Wales and Scotland.

$$y_i = \alpha_o + e\alpha_i + \gamma + X_i\beta + v_i \qquad (1)$$

where

$$y_i = \begin{bmatrix} y_{i1} \\ y_{i2} \\ .. \\ y_{iT} \end{bmatrix}, \qquad X_i = \begin{bmatrix} x_{1i1} & x_{2i1} & \cdots & x_{Ki1} \\ x_{1i2} & x_{2i2} & & x_{Ki2} \\ \vdots & \vdots & & \vdots \\ x_{1iT} & x_{2iT} & & x_{KiT} \end{bmatrix}.$$

$v'_i = (v_{i1}, \ldots, v_{iT})$, $\gamma' = (\gamma_1, \gamma_2, \ldots, \gamma_T)$, $\beta' = (\beta_1, \beta_2, \ldots, \beta_K)$.

$E(v_i) = 0, \qquad E(v_i v_i') = \sigma_v^2 I_T, \qquad E(v_i v_j') = 0 \text{ if } i \neq j$

e is an N-dimensional vector of ones, and α_0 is an N-dimensional vector of constants (α).

The subscript i (=1, ...N) stands for the region and t (= 1,... T) for the year.

The dependent variable, *y*, is the nominal hourly wage (for manual and non-manual workers separately). The vector of regressors (*X*) includes lagged dependent variables. The usual bias (Nickell, 1981; Hsiao, 1986) implied by the presence of such variables is deemed not important as it is of order 1/T and the number of time periods (T = 23) is considered sufficiently large. We therefore estimate models using ordinary least squares and instrumental variable approaches where appropriate. *X* also contains unemployment and long-term unemployment. According to the theory, we should use the real wage in such equations. We prefer to include year dummies in order to adjust for this because it is not clear which price index should be used to deflate regional nominal wages. We will show that this specification is sufficient for our purpose. Following the idea that regional prices are also relevant when studying the determination of wages at the regional level (see Blackaby and Manning, 1990a), we will add regional prices in order to check whether they have an additional influence. Other regional variables will be included as independent variables in order to verify that no other influences are omitted. The same estimations will then be carried out

using data on weekly wages of skilled and unskilled occupations. The separation between skilled and unskilled occupations is deemed interesting because it is more relevant to current labour market issues.

2.4 Results of the estimations and analysis

This section presents the results of estimating different specifications, which are all based on the general model above. The issues discussed in section 2.2 will be dealt with in turn. In particular we present results for manual and for non-manual workers (and we distinguish between wages including overtime and wages excluding overtime). Results for average hourly wages (for all occupations) are presented in table C.2.2 (appendix C) for reference.

2.4.1 The simple model

We begin by estimating a "simple model" in which only the nominal hourly wage (w), the unemployment rate (u) and the proportion of long-term unemployment (ltu) are included in the equation, as well as the regional and time dummies. The time dummies can be thought of as adjusting from nominal to real wages. In carrying out the initial estimations, we found evidence of serial correlation. One apparent solution was to introduce lagged variables (up to t-2). Note here that wage data are taken from April statistics while the unemployment and the proportion of long-term unemployment variables are from July statistics. Because wage determination depends on observed, current unemployment rate, we consider that using unemployment and long-term unemployment measured in the previous year is more appropriate. The labour market variables are therefore included with a lag. The first wage equation to be estimated has the following form:

Model 1:

$$\ln w_{it} = \alpha_0 + \alpha_i + \gamma_t + \beta_1 \ln w_{it-1} + \beta_2 \ln w_{it-2} + \lambda_2 \ln u_{it-1} + \lambda_3 \ln u_{it-2} + \delta_2 \ln ltu_{it-1} + \delta_3 \ln ltu_{it-2} + v_{it}$$

The results obtained for model 1 (see table C.2.1 in appendix C) show that several variables have insignificant coefficients. We will not give any economic interpretation of these results but directly turn to a more parsimonious specification. The lagged wage variables have strongly significant coefficients so they are kept. The second lag of long-term unemployment is always insignificant and is therefore dropped. Although both lags of unemployment have badly determined coefficients, we keep the first lag as such an equation would not make economic sense without an unemployment variable. We arrive at the following form:[7]

Model 2:

$$\ln w_{it} = \alpha_0 + \alpha_i + \gamma_t + \beta_1 \ln w_{it-1} + \beta_2 \ln w_{it-2} + \lambda \ln u_{it-1} + \delta \ln ltu_{it-1} + v_{it}$$

Table 2.3 illustrates the main finding of the paper: long-term unemployment dampens the negative influence that unemployment has on wages. This is shown with strongly significant coefficients (respectively negative for unemployment and positive for long-term unemployment). In this basic model, for manual workers, there is no difference in the unemployment elasticity of wages whether we consider wages including overtime or not. It is around -0.16. For non-manual workers, the elasticity is

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[7] No satisfactory variables were found to be used as instruments for unemployment. It is difficult to find a good instrument for unemployment and it has been argued that the use of weak instruments can lead to biased coefficients (Bound et al., 1995). Bound et al. show that using instruments which are only weakly correlated with the endogenous variable can lead to large inconsistencies in the IV estimates. Previous studies tend to use lagged values of unemployment; we estimated wage equations with such instruments, but the only effect was to make the unemployment variable statistically insignificant. Given the potential serial correlation in the error term, lagged unemployment may fail to be independent of the disturbance. We therefore settled for the second best solution of using no instrument.

greater than for manuals and it is greater in absolute value for the equations using wages including overtime (respectively -0.178 and -0.226). The elasticity of wages with respect to the proportion of long-term unemployment is positive and always greater than the unemployment elasticity of wages in absolute value. It is higher for non-manual workers than for manual workers. For manuals, it is slightly greater for wages including overtime, while the opposite is true for non-manuals. A doubling in the unemployment rate is estimated to lead, ceteris paribus, to a decrease in wages of 16% for manuals and of 18-23 % (depending on the measure of wages used) for non-manuals. The same increase in the proportion of long-term unemployment leads to a rise of manual wages by 22-24% and by 35% for non-manual wages. These are large estimated effects;[8] from table 2.1 we can see that our elasticities are larger (in absolute value) than most previous results.

Given that wages seem to be more responsive to the proportion of long-term unemployment than to unemployment, we can see that in order to keep wages constant in the long-run, the unemployment rate will have to more than double if the proportion of long-term unemployment doubles.[9] Table 2.1 shows that there is no consensus from previous studies about the relative absolute value of the elasticities. Wages have previously been found to be less or more sensitive to long-term unemployment than to unemployment.

The results are only slightly sensitive to the measure of wages used. Comparing the elasticity of wages to the proportion of long-term unemployment for

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[8] In table 2C, column (1) shows that the elasticities are very high when taking the average wage (-0.316 and 0.515 for unemployment and long-term unemployment respectively).

[9] We assume constant returns to scale in the economy. For a given unemployment rate, an increase in the proportion of long-term unemployment induces an increase in wages at each level of unemployment. The long-run adjustments sufficient to bring wages back to their initial level necessitate an increase in unemployment.

wages including overtime and for wages excluding overtime, we can see that they are very close to each other. The elasticity of wages to unemployment is also very similar across both measures of manuals' wages, but it is slightly higher when comparing the two measures of non-manual wages.[10] Also, there is no systematic direction in the differences. It can be concluded that the measure of wages used does not alter the main findings.

2.4.2 Sensitivity of results to the functional form

2.4.2.1 Introducing long-term unemployment in level

Usually, studies investigating the role of long-term unemployment in the determination of wages or introducing long-term unemployment in wage equations choose to introduce the variable in levels rather than logarithms. They generally add the proportion of long-term unemployment in total unemployment as an independent variable in the wage equation in order to check whether there is a composition effect. To compare our results with these studies, we re-estimate the same specifications using the proportion of long-term unemployment without logarithms. Table 2.3C shows that the main result is not affected. The elasticities found are similar to those previously estimated. Compared to earlier studies (see table 2.1), the unemployment elasticity of wages which we find is on the upper side of the range of previous results. Moreover, contrary to what we find here, when a separation is made between manual workers and non-manual workers it has usually been found that the unemployment elasticity of wages is higher for manuals. This result will be investigated further once additional specifications have been estimated.

Concerning the long-term unemployment coefficient, we observe that our

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[10] The difference (in absolute value) between the elasticities is always lower than 0.017, except for the

coefficient (around 0.001) is smaller than most previous estimates (except when they are negative). However, contrary to what these studies find, our coefficient is consistently positive and statistically significant. Our specification therefore brings additional support to the Layard and Nickell hypothesis. Moreover, for the previous studies for which the wage - long-term unemployment elasticity is calculated (see table 2.1), we observe that ours is always greater. We find evidence not only that the Layard and Nickell effect exists but also that it is greater than estimated up to now.[11]

We also note that for a proportion of long-term unemployment of 40% (the UK long-term unemployment proportion in 1994), wages (for non-manuals and manuals) are 4% higher than they would be with no long-term unemployment. These findings are similar to Partridge and Rickman's results (1997) for the US (in their two-stage-least squares estimation). Given that the long-term unemployment semi-elasticity is found to be roughly the same for the US and for the UK, but the average proportion of long-term unemployment is much higher in the latter, the elasticities found for the UK are significantly higher than for the US. This result suggests that a decrease in the proportion of long-term unemployment reduces wage pressure on the labour market. This is a justification for the use of policies targeted at long-term unemployment, as it means that there are no inflationary risks in reducing such unemployment.

Considering the choice between equations with all variables in logarithms and equations with long-term unemployment in levels, we find that the residual sum of squares is always lower in estimations using logarithms. It seems therefore that the latter has more explanatory power. This has motivated our focus on the logarithm of

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unemployment elasticity of non-manuals' wages for which the difference is around 0.05.

[11] Column (5) in table 2C shows that the result also holds for average hourly wages. Again, the elasticities found are very high (-0.417 and 0.486).

the proportion of long-term unemployment.

2.4.2.2 The effect of adding non-linear terms

The next experiment is to introduce non-linear terms. Following the idea of Blanchflower and Oswald (1990), the relationship between wages and unemployment could be highly non-linear, in which case the long-term unemployment variable might become redundant. We therefore introduce first the square of log unemployment, then the cube of the same variable. From table C.2.4 (see appendix C), we can see that, as far as manual workers are concerned, the non-linear terms are not statistically significant. Moreover, the elasticities are not affected. For non-manual workers, the non-linear terms are not significant either, but their inclusion in the equation drives the coefficient on log unemployment to insignificance. We calculate the elasticities anyway and find that they are not affected (the only exception being when the square is included in the equation where the measure of hourly wages excludes overtime). We can see that the additional variables have some degree of significance for non-manual wages excluding overtime (at the 10% level). It is also noticeable that the coefficient on log unemployment is affected by their inclusion (in size and in significance). The important result to note here is that the coefficient on long-term unemployment is never affected by the inclusion of non-linear terms. Columns (3) and (4) in table C.2.1 show similar estimations for the average hourly wage.

2.4.3 Sensitivity of the results to the specification: including other regional variables

The next step is to check whether other regional variables have an additional influence not captured by the dummies already introduced and whether the omission

of these variables was leading to biased results.

The first idea is that the employment structure of the region may have an effect on the distribution of wages across regions (table C.2.5). There is indeed evidence of inter-industry wage differentials not explained by any differences between the workers, but linked to the profitability of each industry (Krueger and Summers (1988), Oswald (1996)). The industrial structure of each region may therefore have a part in explaining regional wage differences. In order to take this into account, we have chosen to introduce the share of employment in manufacturing as an additional regressor. However, this variable was not found to have any statistically significant additional influence. This leads us to think that the potential industrial structure effect is taken into account by the regional dummies. It may also be that the regressor chosen is not sufficient to take into account possible rent-sharing effects.

The level of education of an individual has often been identified as a significant determinant of that individual's wage. Aggregating at the regional level, it can be argued that the average level of education in the region will influence the average regional wage. We attempt to control for this by including the average number of years of schooling in the region (table C.2.6). Unfortunately, the data are available only for both sexes and until 1990. Moreover, table 2.2 shows that there is little variation in the number of years at school. The results show that the new variable has a significant coefficient for manual workers. The results do not appear consistent with the theory. Across the range of values for the years of schooling, the return to an additional year is close to zero. Given the limitations of the data, we do not retain the schooling variable.

We introduce the growth in the share of employment in manufacturing as an additional regressor in order to test whether the decline in manufacturing in a certain

region has had an effect on wages (table C.2.7). We observe that again the added regressor has no significant influence on wages, except for manual wages including overtime. It can be thought that manuals would be the most affected by the decline in manufacturing as they have fewer alternatives in the labour market than non-manual workers. Also, manual workers, who probably have training more specific to the firm than non-manual workers have, are less flexible and less easily retrained. Moreover, the fact that only manual wages including overtime seem to be sensitive to a change in the share of employment in manufacturing could be explained by the fact that overtime pay of manual workers would be the first element of pay to be affected by such a change. Firms that need less labour have an interest in decreasing incentives to work longer hours. Because we want to keep consistent models for all wage measures, we keep this variable in the subsequent specifications.

The next experiment concerns regional prices (table 2.4). We have seen in section 2.2 that previous results have typically been sensitive to whether regional prices are included or not and to which measure of prices is used.[12] In particular they were sensitive to whether prices included housing costs or not. We want to check the respective influences of house and consumer prices and their overall relevance in such equations, so we choose here to include them both as individual variables.[13] Given

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[12] The theoretical argument behind their inclusion in such equation is the following. The determination of wages may take place at the level of the firm; workers therefore take local prices into consideration when forming their wage claims. Wages can also be determined at the national level, but with some regional adjustment. For example, there is an allowance for people working in London.

[13] The current value of consumer prices is included as it is thought that workers are affected by and concerned about them on a day to day basis. As this variable is possibly endogenous, we will instrument it with its first lag. The first lag of house prices is used as the purchase of a house is a medium to long-term process and workers are probably less quickly aware of their level. As house prices may also be considered endogenous, we use building societies advances as an instrument. The amount given to buyers by building societies is expected to be closely related to the amount the buyers have to pay. Following the suggestion of Bound et al. (1995), we used an F test on the instruments to check how

that region and time dummies are already included in the equation, only the additional influences of regional prices will appear, so that the coefficients may have a small economic size.

Our results were affected by the inclusion of prices. As far as manual workers are concerned, we observe that the influence of prices is not statistically significant except for the effect of house prices on wages including overtime. Using the same specification for non-manual workers, we find that house prices are statistically significant while consumer prices are not. It can be that manual workers are less mobile than non-manual workers so that house prices are an important factor in the determination of non-manual wages, while they are not for manual wages. It is also important to note that, for non-manuals, the coefficient on the log of unemployment becomes insignificant and changes sign. This result will be studied further below.

2.4.4 Real wage

It has been assumed in this chapter that the current specification, controlling for time and region dummies, implicitly controls for national prices and therefore that the coefficients are valid estimates of the effect of unemployment and real wages. It can be argued however that prices and unemployment interact and that the coefficient may be affected if we had the real wage as a dependent variable. We follow Blackaby et al. (1991) and use the following model:

Let the real wage be determined in the following way:

$$\ln(\frac{W_R}{Q}) = F(.) \qquad (3)$$

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strongly correlated were the instruments with the endogenous variables. We find that advances are strongly correlated with house prices, but that lagged consumer prices are only weakly correlated with consumer prices. The latter is due to the inclusion of year dummies, which capture most of the correlation.

with W_R the regional nominal wage and Q the relevant price level. The latter can be considered to be determined partly by national prices (P_N) and partly by regional prices (P_R).

$$Q = P_R^{\theta} P_N^{1-\theta} \qquad (4)$$

with $0 \leq \theta \leq 1$. The regional prices can in turn be considered to be a function of house and consumer prices:

$$P_R = HP_R^{\alpha} CP_R^{1-\alpha} \qquad (5)$$

with $0 \leq \alpha \leq 1$. Replacing (4) and (5) in (3) we get:

$$\ln(\frac{W_R}{P_N}) = F(.) + \alpha\theta \ln(\frac{HP_R}{P_N}) + (1-\alpha)\theta \ln(\frac{CP_R}{P_N}) \qquad (6)$$

We use the national retail price index (including all items) as a measure of national prices and we transform our house prices and consumer prices into indexes.[14] The results are shown in table C.2.8; we can see that they are not affected by the use of this specification. This provides evidence that including time dummies seems sufficient to capture the effect of the price level. We therefore continue to use the previous specification.

2.4.5 Summary

From the results so far, in particular those summarised in table 2.4, we see that the elasticity of wages to long-term unemployment is found to be positive and always significant for manual workers. Numerically, it is larger for manual workers (0.2-0.3) than for non-manual workers (around 0.06). We therefore find elasticities consistent with the idea that manuals' wages are more sensitive to the state of the labour market than non-manuals' wages (see for example Jackman and Savouri, 1991). Manuals'

[14] All indexes are equal to 1 in 1987.

wages are also found to be more sensitive to the proportion of long-term unemployment than to the unemployment rate.

The coefficient of unemployment is not significantly different from zero for non-manual workers. This could mean that the Layard-Nickell hypothesis does not hold for non-manuals (or that the specification does not properly take it into account). It could also be that aggregate unemployment has no statistically significant effect on non-manual wages. Another possible explanation could be that the relationship between unemployment and non-manuals' wages does not occur at the level of the region and cannot be captured in regional wage equations.

Comparing with previous studies, we find that the elasticity of wages to unemployment (for manual workers) is within the range of values previously estimated, while the elasticity of wages to long-term unemployment is greater than previous findings. Nickell (1987), for example, found that for manual workers the elasticity of wages to the proportion of long-term unemployment was 0.048 and the elasticity of wages to unemployment was -0.106.

2.5 Robustness of the specification

2.5.1 Difference between manual and non-manual workers.

Table C.2.9 shows that when we include non-manual and manual wages in the same estimation and include dummies to identify non-manual workers we find that the two statistically significant differences between non-manual and manuals are house prices and the growth in the share of manufacturing. House prices have a larger and more statistically significant effect on non-manual wages. Growth in the share of manufacturing is found to have a positive effect on manual wages and a negative effect on non-manual wages. The difference is statistically significant for wages

including overtime. These results provide justification for the distinction between manuals and non-manuals.

2.5.2 The unemployment measure

The use of the proportion of long-term unemployed among the people currently unemployed has been criticised on two grounds. First, it suffers from a potential collinearity problem as it is strongly correlated with the level of unemployment. Second, some authors (Thomas, 2000) have argued that the "correct" measure of the long-term unemployment proportion is the number of long-term unemployed this period divided by the number unemployed a year earlier. These are strong criticisms and this section is devoted to addressing them.

We separate our unemployment measure between long-term unemployment rate and short-term unemployment rate (table C.2.10). The results show that the long-term unemployment rate is positively and statistically significantly related to regional wages. The effect of the short-term unemployment rate is found to be negative in all cases but very close to zero and statistically insignificant for non-manuals. The elasticity of wages to the rate of long-term unemployment is smaller than what was found for the proportion of long-term unemployment. As opposed to Graafland (1991), we do find a specific long-term unemployment effect.

Machin and Manning (1999) suggest that the proportion of long-term unemployment is, after controlling for the level of unemployment, correlated with the change in unemployment. They think the latter captures the composition effect. We therefore introduce the change in unemployment into our specification in order to check whether such a variable drives the coefficient of long-term unemployment to insignificance (see table C.2.11). Our results show that the new variable has a small

influence on wages and is statistically significant only for manual wages including overtime. However, the influence of long-term unemployment remains strong and statistically significant; the wage-long-term unemployment elasticities remain the same. Our results seem therefore robust to such a test.

We then replaced our measure of the proportion of long-term unemployment with the "correct" variable suggested above. The interpretation is slightly different here: the new variable represents the number of people who are long-term unemployed over the population at risk of becoming long-term unemployed (i.e. those unemployed one year earlier). It represents the proportion of people who have been the least competitive on the labour market and have not been able to find a job a year later, while the previous long-term unemployment variable measured the proportion of the current unemployed who have been unemployed for more than a year. We suffer from a loss of degrees of freedom due to the availability of the data. Table C.2.12 in appendix C shows that the new variable is statistically insignificant except for manual wages excluding overtime. Comparing with results in table 2.4, we find that the coefficient on "true" long-term unemployment becomes very close to zero for non-manuals. For manuals, only the statistical significance of the coefficients is affected. The coefficient on unemployment loses some significance but becomes larger. Overall, the direction of our findings is not contradicted by these results. Wherever unemployment is statistically significant, we find a statistically significant and opposite long-term unemployment effect on wages.

2.5.3 Parameters' constancy

In order to test the robustness of our findings over time we separated the

sample in two periods:[15] 1973-1986 and 1987-1995 (see table C.2.13). All economic variables as well as region dummies are tested. Individual coefficients seem quite robust; few of the "break variables" are statistically significant and none are statistically significant at 5 percent. We can note that the consumer prices effect on non-manual wages increases over the period. Taking the "break variables" jointly, it appears that only the specification for manual wages excluding overtime is robust over time. Overall, it appears that specifications with wages excluding overtime are more stable. This is a justification for preferring the use of the latter measure of wages.

2.6 Test of the hypothesis using wages of skilled and unskilled people.

Traditionally the distinction between manual and non-manual occupations has been associated with the distinction between skilled and unskilled occupations. Given the recent transformations of the labour market and in particular the development of precarious unskilled jobs in the services sector, we think that it is important to distinguish occupations according to their skill content. In order to see the issue from this new point of view, we collected data on wages by occupation.

We selected occupations for which data were available over the whole period considered.[16] Table 2.5 indicates how we classified occupations according to skill level.[17]

We proceed to the same estimations as before. Tables 2.6[18] and 2.7 show the

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[15] 1986 corresponds to the peak of unemployment in the Britain in the period considered.

[16] Wages are measured weekly (including overtime). These were the only data available for several occupations. The average wage for skilled and unskilled occupations was calculated by summing the product of the average wage and the number of persons interviewed for each occupation and dividing this sum by the total number of people interviewed (see table 2 for summary statistics).

[17] Note that from 1991, a common classification (SOC classification) was adopted. Before that, the New Earnings Survey used the "Key Occupations for Statistical Purposes" classification.

[18] Some serial correlation was found when estimating the equations for skilled occupations. This was

results for skilled and unskilled occupations respectively. In table 2.6, columns 1 to 3 we can see that the elasticity of skilled wages to long-term unemployment is always positive and significant. For the main results in column 2 (corresponding to table 2.4 for manual/non-manual wages[19]); we estimate the elasticity to be 0.262. The unemployment rate does not have a statistically significant effect on wages of skilled occupations (except in the basic model of column 1). The elasticity of wages to unemployment is always negative but varies across the first three columns. A possible explanation for these results could be that the wages of skilled people are really not linked to the state of the general labour market (in particular to aggregate unemployment), but there exists an unobservable variable which influences both skilled occupations' wages and aggregate long-term unemployment. Such a variable could be, for example, the well-documented shift in demand away from unskilled people and towards skilled workers; this will tend to increase the wages of the skilled (because of shortages on their job market) and lead to greater long-term unemployment among the unskilled (who have few alternatives). This shift could be omitted in our specification and the time and region dummies may not capture it. At the same time, lower regional unemployment does not appear to increase skilled regional wages.

Unemployment does appear to have a negative influence on unskilled wages (the elasticity of wages to unemployment being between -0.043 and -0.1); this is consistent with previous results. Furthermore, the elasticity of wages to long-term

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partly solved by the inclusion of the second lag of long-term unemployment as well as the first lag, and the second lag of house prices instead of the first lag. To keep the specification consistent for both skilled and unskilled wages, we adopted the same variables in both equations.

[19] Note that in the specifications of columns 1 to 4 in tables 2.6 and 2.7, the model is improved by the exclusion of consumer prices. This does not affect the results, so they are dropped for simplification.

unemployment is found positive and statistically significant at 0.03.[20] We can conclude that the Layard-Nickell hypothesis appears to be verified for unskilled workers.

We should note that we find a positive and significant influence on the part of house prices for skilled occupations only. However, if we use the first lag of house prices instead of the second lag, we find a positive and statistically significant (at 11 percent) effect for unskilled workers as well (see last column of table 2.7). This is different from what we found for manual workers. This suggests that unskilled occupations do not overlap completely with manual occupations. Moreover, this indicates that unskilled people may have specific characteristics that will not be taken into account when considering manual workers.

The last column of tables 2.6 and 2.7 shows the test for the constancy of parameters over time. It appears that the relationship between wages and unemployment evolved over time, in particular for skilled workers. Overall, it appears that the specification using skilled wages is less robust than the specification using unskilled wages. A limitation of this study is that we use overall unemployment and long-term unemployment, a more appropriate measure would be specific to each of the two groups.

Table C.2.14 shows that the difference between skilled and unskilled occupations is more statistically significant than the difference between manuals and non-manuals and that the distinction between the two is justified.

2.7 Conclusion

This chapter has investigated the Layard and Nickell hypothesis, which states

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[20] The small elasticity may be found because we have included the second lag of long-term unemployment.

that a higher proportion of long-term unemployment in total unemployment means less downward pressure on wages. The current empirical evidence has been found to be weak by several authors (e.g. Machin and Manning, 1999). We provide a critical summary of the evidence to identify its main weaknesses. We then attempt to address these issues and test the hypothesis.

We have identified a need to differentiate between different types of workers. We chose to distinguish between manuals and non-manuals and between skilled and unskilled workers. These distinctions appear to be critical for the results. We find some evidence that, as would be expected, wages excluding overtime is a more appropriate measure to use. We find an important role for house prices. Finally, several econometric problems identified in previous studies (in particular the lack of degrees of freedom and the spurious regression problems identified by Moulton, 1990) are taken care here with panel data analysis and the use of regional data.

The chapter provides what is perhaps some of the strongest available evidence for the Layard-Nickell hypothesis. In most specifications, in particular those for manual or unskilled workers, the coefficient on the proportion of long-term unemployment in total unemployment is positive and significantly different from zero. The results are not affected over time.

The long-term elasticities of wages to unemployment and to long-term unemployment are estimated to be respectively around -0.17 and 0.25 for manual workers. As far as non-manual workers are concerned, unemployment and long-term unemployment do not appear to have a statistically significant effect on wages except in the basic model. The size of the unemployment elasticity of wages is within the range of previous studies' results, while the size of the long-term unemployment elasticity is greater than that found in most previous work.

For manual workers, these results give support to the Layard and Nickell hypothesis. However, it seems that the influences at work in the determination of skilled and non-manuals' wages are more complex than captured by our specifications.

The results for skilled workers are similar to the results obtained for non-manual workers: mostly insignificant except in the basic model. For unskilled people, the elasticities are lower than for manual workers, but all have signs and significance consistent with the Layard-Nickell hypothesis (they are equal to -0.06 and 0.13 respectively for unemployment and long-term unemployment).

Our results suggest there may be different markets within the aggregate market for labour and that they may have different "rules". Overall, the results show that the proportion of long-term unemployment appears to have a specific and fairly strong effect on wages, even when we control for other influences. Given that we study the relationship at the regional level, it appears logical that we find strong results for manual, or unskilled workers. They may face a more regional labour market than non-manuals or skilled workers who have been found to be more mobile and to participate in a national labour market. Moreover, the strength of our results compared to those in previous studies may be due to the fact that we have more observations on the variables of interest (unemployment and long-term unemployment) and that we are able to capture an additional level of variation: across region.

Table 2.1: The evidence from previous studies: long-term elastiticities.[a]

	Long-term elasticity of wages to unemployment	Long-term elasticity of wages to the proportion of long-term unemployment	Comments
Nickell (1987)	-0.104*	0.048*	Unemployment and long-term unemployment variables are at the national level.
Blanchflower and Oswald (1990) (1)[b]	-0.057*	-0.066	$(logU)^3$ is also included.
B-O (1990) (2)[b]	-0.200*	0.049	$(logU)^3$ is also included.
B-O (1990) (3)[b]	-0.117*	0.073	$(logU)^3$ is also included.
Blackaby and Manning (1990a) ('75)[c]	-0.115*	0.079♣*	Include regional required income prices[e]
B-M (1990a) ('82)[c]	-0.167*	0.242♣*	Include regional required income prices
Nickell and Wadhwani (1990)	-0.100*	0.250♣*	Wage is at the level of the firm. Unemployment and long-term unemployment are at the national level. Log unemployment at the industry level is also included.
Blackaby et al (1991)	-0.103*	0.106*	Include regional required income prices
Blackaby et al (1991)	-0.043*	-0.016	Include regional required income prices and regional dummies
Jackman and Savouri (1991) AE[d]	-0.070	0.136♣*	All regional variables expressed as deviation from their national value. Include consumer prices, house prices and regional dummies.
J-S (1991) NM[d]	-0.010	0.046♣	Same as above
J-S (1991) M[d]	-0.090*	0.042♣	Same as above
J-S (1991) AE[d]	-0.050*	0.111♣*	Same plus activity rate
J-S (1991) NM[d]	-0.010	0.043♣	Same as above
J-S (1991) M[d]	-0.070*	-0.004♣	Same as above
Christofides and Oswald (1992)	-0.058*	-0.010	Canadian data (the proportion of long-term unemployment is at the national level)
C-O (1992)		-0.002	Same but log unemployment is not included
Blanchflower and Oswald (1994a)	-0.093*	0.058	Include regional dummies
B-O (1994a)	-0.077*	0.053	Include regional dummies and consumer prices
B-O (1994a)	-0.045	0.022	Include regional dummies and required income prices
B-O (1994a)	-0.061*	0.037	Include regional dummies and first lag of required income prices
B-O (1994b)	-0.152*		Austrian data, no region dummies
B-O (1994b)	-0.213		Same, 8 region dummies
Partridge and Rickman (1997)	-0.117*	0.065*	US data, 2SLS estimation.

a) The long-term unemployment elasticities of wages are calculated by multiplying the coefficients of the proportion of long-term unemployment variable by the average proportion of long-term unemployment during the relevant period. The latter is either given in the studies or our own estimation (indicated by a ♣). A * indicates that the regression coefficients used to calculate the elasticities were significantly different from 0 at the 5% level of significance.

b) The numbers in parentheses refer to different data sets. (1) refers to the Workplace Industrial Relations Survey of 1980; (2) refers to the National Child Development Study of 1981 and (3) refers to the British Social Attitude Survey of 1983-87.

c) These numbers refer to the years in which the data were taken from the General Household Survey.

d) The following abbreviations AE, NM and M mean all employees, non-manuals and manuals respectively.

e) Required income prices are defined as cost of living including housing costs.

Table 2.2: Descriptive statistics (1976-1995)

Variable	Mean	Std. Dev.	Min.	Max.
Log wage (manuals excluding overtime)	1.235	0.463	0.266	1.895
Log wage (manuals including overtime)	1.257	0.466	0.285	1.921
Log wage (non-manuals excluding overtime)	1.692	0.522	0.664	2.569
Log wage (non-manuals including overtime)	1.589	0.469	0.661	2.409
Log wage (all occupations)	1.443	0.515	0.425	2.357
Long-term unemployment (% of total unemployment)	34.965	9.252	14.200	52.60
Log unemployment	2.241	0.428	1.131	2.907
Log long-term unemployment	3.515	0.287	2.653	3.963
Log consumer prices	10.910	0.370	10.131	11.455
Log house prices (1975-1994)	10.238	0.582	9.111	11.319
Share of employment in manufacturing (%)	27.056	6.385	12.333	45.186
Years of schooling (1973-1990)	10.364	0.224	9.885	10.877
Log wage (skilled)	5.268	0.510	4.241	6.157
Log wage (unskilled)	5.010	0.464	4.054	5.702

Table 2.3: Panel estimation of regional wage equations.
Dependent variable: log nominal hourly wage for men.
Britain 1976-95: Model 2.

	Manuals excluding overtime	Manuals including overtime	Non-manuals excluding overtime	Non-manuals including overtime
Constant	0.203**	0.195**	0.225**	0.254**
	(0.021)	(0.020)	(0.032)	(0.033)
Log wage (-1)	0.570**	0.576**	0.502**	0.505**
	(0.070)	(0.069)	(0.074)	(0.076)
Log wage (-2)	0.250**	0.255**	0.332**	0.358**
	(0.061)	(0.060)	(0.068)	(0.071)
Log unemployment (-1)	-0.028**	-0.026**	-0.029**	-0.031**
	(0.007)	(0.006)	(0.008)	(0.009)
Log of proportion of long-term unemployment (-1)	0.040**	0.040**	0.058**	0.047**
	(0.008)	(0.008)	(0.012)	(0.012)
Region dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
Long-term elasticity of wage to unemployment	-0.155	-0.157	-0.178	-0.226
Long-term elasticity of wage to the proportion of long-term unemployment	0.222	0.239	0.351	0.343
Test for first-order serial correlation	-0.967	-0.407	0.983	0.687
Test for second-order serial correlation	-1.549	-1.651	-1.177	-0.722
Residual sum of squares	0.013	0.011	0.024	0.023
Total sum of squares	42.628	43.310	54.212	43.749
Wald test of joint significance (df = 4)	614.482	736.392	512.796	437.183
Wald test - jt sig of time dums (df = 19)	1250.868	1755.239	1095.509	2180.744
Wald test - jt sig of region dums (df = 9)	33.927	33.884	30.923	23.150
Wald test - jt sig of both dums (df = 28)	1746.265	2831.743	1369.482	2640.947

Notes for all statistical tables:

(1) A * indicates a coefficient significantly different from zero at the 10 per cent level of significance. A ** indicates a coefficient significantly different from zero at the 5 per cent level of significance.

(2) Standard errors in parentheses. All standard errors and test statistics are consistent in the presence of general heteroscedasticity (Arellano and Bond, 1988).

(3) The test for serial correlation follows the standard normal distribution under the null of no serial correlation. The 5% level of significance is 1.6449 (values in bold indicate the presence of serial correlation).

(4) The Wald tests follow a χ^2 distribution under the null hypothesis that the coefficients are equal to zero. A number in bold indicates that we cannot reject the null hypothesis.

Table 2.4: Panel estimation of regional wage equations.
Dependent variable: log nominal hourly wage for men.
Britain 1976-95: adding regional prices and growth in share of manufacturing.

	Manuals excluding overtime	Manuals including overtime	Non-manuals excluding overtime	Non-manuals including overtime
Constant	0.785	-0.617	-9.794	-7.128
	(3.811)	(2.443)	(10.328)	(7.125)
Log wage (-1)	0.570**	0.552**	0.349**	0.386**
	(0.085)	(0.075)	(0.130)	(0.101)
Log wage (-2)	0.269**	0.271**	0.248**	0.320**
	(0.062)	(0.060)	(0.114)	(0.091)
Log proportion of long-term unemployment (-1)	0.043**	0.039**	0.025	0.018
	(0.014)	(0.011)	(0.032)	(0.025)
Log unemployment rate (-1)	-0.025**	-0.018*	0.031	0.017
	(0.013)	(0.010)	(0.040)	(0.029)
Log house prices (-1)	0.012	0.021*	0.110**	0.087**
	(0.017)	(0.013)	(0.050)	(0.033)
Log consumer prices	-0.069	0.061	0.899	0.657
	(0.369)	(0.235)	(0.996)	(0.692)
Growth of share of manufacturing	0.066*	0.082**	-0.029	-0.032
	(0.038)	(0.032)	(0.054)	(0.044)
Region dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
Long-term elasticity of wage to unemployment	-0.155	-0.102	0.077	0.058
Long-term elasticity of wage to the proportion of long-term unemployment	0.267	0.220	0.062	0.061
First-order serial correlation	-0.946	-0.200	1.037	0.522
Second-order serial correlation	-1.410	-0.910	0.794	0.360
Residual sum of squares	0.013	0.010	0.044	0.033
Total sum of square	42.628	43.310	54.212	43.749
Wald test of joint significance (df = 7)	691.564	920.668	457.621	460.795
Wald test - jt sig of time dums (df = 19)	1197.163	1456.389	553.436	1102.544
Wald test - jt sig of region dums (df = 9)	24.288	23.839	17.802	**15.653**
Wald test - jt sig of both dums (df = 28)	1686.673	2620.463	1023.532	2387.351
Durbin-Hu-Hausman test	**0.020**	**0.410**	5.900	3.970

Notes (additional to notes on table 2.3):

(1) Instruments used are Log wage (-1), Log wage (-2), Log proportion of long-term unemployment (-1), Log unemployment (-1), Log advances (-1), Log consumer prices (-1), Growth of share of manufacturing, time and region dummies.

(2) The Durbin-Hu-Hausman test checks the need for IV estimation. Under the null hypothesis, the OLS estimator is consistent and efficient and the IV estimator is consistent but inefficient, under the alternative only the IV estimation is consistent. The F statistics are shown, a number in bold indicates that we cannot reject the null hypothesis.

Table 2.5: Skilled and unskilled occupations classification

Skilled occupations	Unskilled occupations
1973-1990	**1973-1990**
Professional and related in science , engineering, technology and similar fields	Clerical and related
Managerial (excluding general management)	Farming fishing and related
Materials processing (excluding metals)	Painting, repetitive assembling, product inspecting, packaging and related
Making and repairing (excluding metal and electrical)	Transport operating, materials moving and storing and related
Processing, making and repairing and related (metal and electrical)	
1991-1995	**1991-1995**
Managers and administrators	Clerical occupations
Professional occupations	Personal and protective service occupations
Associate professional and technical occupations	Plants and machine operatives
Craft and related occupations	Other occupations

Table 2.6: Panel estimation of regional wage equation. Britain 1976-95. Dependent variable: log nominal weekly wage for men. Skilled occupations.

	Simple model	Adding regional prices and manufacturing	Real wage	Constancy of parameters
Constant	1.245**	0.973**	1.851**	1.936**
	(0.269)	(0.292)	(0.409)	(0.611)
Log wage (-1)	0.368**	0.296**	0.296**	-0.140
	(0.114)	(0.104)	(0.104)	(0.162)
Log wage (-2)	0.343**	0.304**	0.304**	0.033
	(0.111)	(0.104)	(0.104)	(0.132)
Log proportion of long-term unemployment (-1)	0.052**	0.061**	0.061**	0.064
	(0.018)	(0.018)	(0.018)	(0.042)
Log proportion of long-term unemployment (-2)	0.024	0.022	0.022	0.213**
	(0.030)	(0.030)	(0.030)	(0.097)
Log unemployment rate (-1)	-0.022**	-0.004	-0.004	0.206**
	(0.013)	(0.014)	(0.014)	(0.096)
Log house prices (-2)		0.074**	0.074**	0.348**
		(0.018)	(0.018)	(0.160)
Growth of share of manufacturing		-0.069	-0.069	0.038
		(0.078)	(0.078)	(0.092)
Region dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
(B) Log wage (-1)				0.324*
				(0.195)
(B) Log wage (-2)				0.203
				(0.155)
(B) Log proportion of long-term unemployment (-1)				-0.034
				(0.046)
(B) Log proportion of long-term unemployment (-2)				-0.213*
				(0.099)
(B) Log unemployment rate (-1)				-0.276**
				(0.098)
(B) Log house prices (-2)				-0.267
				(0.166)
(B) Growth of share of manufacturing				-0.107
				(0.167)
(B) Region dummies				yes
Long-term elasticity of wage to unemployment	-0.076	-0.01		
Long-term elasticity of wage to long-term unemployment	0.346	0.262		
First-order serial correlation	-1.458	-0.895	-0.895	
Second-order serial correlation	**-1.966**	**-1.674**	**-1.674**	
Residual sum of squares	0.053	0.051	0.051	
Total sum of square	51.820	51.820	3.600	
Wald test of joint significance (df = 5, 7, 7)	204.410	298.130	298.130	
Wald test - jt sig of time dums (df = 19)	420.973	427.481	352.189	
Wald test - jt sig of region dums (df = 9)	25.706	33.192	36.096	
Wald test - jt sig of both dums (df = 28)	581.993	620.770	867.385	
Wald test on break variables (B) (df = 16)				54.835
Wald test on (B) economic variables (df = 7)				20.306
Wald test on (B) region dummies (df = 9)				33.718

Note: Instruments for columns 2 to 4 are log wage (-1) and (-2), log proportion of long-term unemployment (-1) and (-2), log unemployment rate (-1), log advances (-2), growth of shre in manufacturing, region and time dummies.

Table 2.7: Panel estimation of regional wage equation. Britain 1976-95. Dependent variable: log nominal weekly wage for men. Unskilled occupations.

	Simple model	Adding prices and manufacturing	Real wage	Constancy of parameters	Same specification as manuals
Constant	1.662**	1.569**	1.940**	1.837**	3.781
	(0.220)	(0.225)	(0.344)	(0.496)	(4.428)
Log wage (-1)	0.333**	0.329**	0.329**	0.294**	0.340**
	(0.068)	(0.076)	(0.076)	(0.131)	(0.096)
Log wage (-2)	0.295**	0.279**	0.279**	-0.219**	0.238**
	(0.061)	(0.060)	(0.060)	(0.105)	(0.083)
Log proportion of long-term unemployment (-1)	0.086**	0.090**	0.090**	0.037	0.055**
	(0.014)	(0.014)	(0.014)	(0.025)	(0.020)
Log proportion of long-term unemployment (-2)	-0.038**	-0.040**	-0.040**	-0.023	
	(0.015)	(0.014)	(0.014)	(0.023)	
Log unemployment rate (-1)	-0.044**	-0.041**	-0.041**	-0.086**	-0.025*
	(0.008)	(0.008)	(0.008)	(0.030)	(0.015)
Log house prices (-2)		0.018	0.018	-0.084	0.051
		(0.014)	(0.014)	(0.069)	(0.032)
Log consumer prices					-0.244
					(0.453)
Growth of share of manufacturing		0.062	0.062	0.221**	0.073*
		(0.041)	(0.041)	(0.050)	(0.041)
Region dummies	yes	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes	yes
(B) Log wage (-1)				-0.148	
				(0.178)	
(B) Log wage (-2)				0.434**	
				(0.128)	
(B) Log proportion of long-term unemployment (-1)				0.050	
				(0.032)	
(B) Log proportion of long-term unemployment (-2)				-0.023	
				(0.030)	
(B) Log unemployment rate (-1)				0.021	
				(0.033)	
(B) Log house prices (-2)				0.186**	
				(0.078)	
(B) Growth of share of manufacturing				-0.220**	
				(0.093)	
(B) Region dummies	yes	yes	yes	yes	
Long-term elasticity of wage to unemployment	-0.118	-0.104			-0.058
Long-term elasticity of wage to long-term unemployment	0.027	0.025			0.132
First-order serial correlation	**-1.691**	-1.527	-1.527		-0.162
Second-order serial correlation	-1.444	-1.452	-1.452		-0.742
Residual sum of squares	0.020	0.020	0.020		0.022
Total sum of square	42.893	42.893	1.379		42.893
Wald test of joint significance (df = 5, 7, 7)	285.806	321.255	321.251		277.334
Wald test - jt sig of time dums (df = 19)	752.008	740.191	713.721		500.431
Wald test - jt sig of region dums (df = 9)	44.904	40.686	39.023		29.917
Wald test - jt sig of both dums (df = 28)	935.604	968.627	945.287		990.182
Wald test on break variables (B) (df = 16)				57.287	
Wald test on (B) economic variables (df = 7)				32.121	
Wald test on (B) region dummies (df = 9)				45.737	

Appendix A: Summary of previous studies

Table A.2.1: Evidence on the relationship between wages and long-term unemployment

Authors and date	Data	Specification	Result (with respect to LN hypothesis)
Nickell (1987)	Unemployment data : Department of Employment Gazette. Period: 1956-1983.	Three-equation model (employment, price setting and wage setting equations) developed in Layard and Nickell (1986). Several wage equations are estimated, one is chosen and the corresponding employment and price equations are shown. For the wage equation: the dependent variable is the real wage for manual male workers (hourly earnings corrected for overtime plus hourly non-wage labour cost), the independent variables form two groups: the wage pressure variables (mismatch, replacement ratio, real import prices, union power, labour tax rate) and labour market activity (unemployment, proportion of long-term unemployment, proportion of unemployment in the south-east, labour utilisation, past employment and inflow rate to unemployment.) Different combinations of these variables are estimated (always using all the wage pressure variables).	The preferred wage equation includes as independent variables: all the wage pressure variables, log unemployment and the proportion of long-term unemployment. Then, the proportion of long-term unemployment variable is expressed in terms of the past proportion, the level of unemployment and its first two lags. These variables are re-introduced in the wage equation. The equation is re-arranged and the result is that log unemployment has a negative coefficient, the level of unemployment has a positive coefficient and the first difference of unemployment level has a negative coefficient. These results are the basis of the hypothesis. Limitations: time series analysis, the model represents an important simplification.

Blanchflower and Oswald (1990)	(1) The Workplace Industrial Relations Survey of 1980 (WIRS): information on approximately 2,000 British establishments. (2) The National Child Development Study (NCDS) of 1981: information on approximately 6,000 British 23-year-old employees. (3) The British Social Attitude (BSA) Surveys of 1983-87: pooled information on approximately 5,000 British adult employees.	Two preferred specifications: $w = g(x, U, U^2)$ $w = h(x, \log U, (\log U)^3)$ w = individuals' wage [(1) gross weekly pay of the typical semi-skilled employee, (2) gross annual earnings before deduction of income tax and National Insurance, (3) gross weekly pay before deductions for tax and NI, any overtime, bonus, commission and tips)], x = vector of individual or establishment variables, U = unemployment percentage in the relevant county or region, long-term unemployment rates by geographical area are also entered in the equations.	When the proportion of long-term unemployment is included in the equation, it is insignificant when the non-linear terms or regional dummies are included. This result questions the LN hypothesis. Limitations: cross-section, prices are omitted.

Table A.2.1 (ctd)

Blackaby and Manning (1990a)	General Household Survey (1975 and 1982). Department of Employment Gazette for unemployment data. Reward Regional Surveys Ltd for price indices.	(1) Relate individuals' earnings (1975: annual earnings, 1982: weekly earnings), distinguishing regions, to a vector of personal human characteristics, of industry of employment variables, of occupation of employment variables and total regional unemployment. (2) Same variables + regional cost-of-living and long-term unemployment. Appendix: direct test of Blanchflower and Oswald's findings, using the wage curve framework including prices.	Find supportive evidence of the LN hypothesis (significant positive coefficient of long-term unemployment) in specifications including cost-of-living variable. However, this coefficient becomes insignificant in a number of cases when cost-of-living measure excluding housing costs is used. Limitations: small number of data points and unofficial cost-of-living indices.
Nickell and Wadhwani (1990)	Published accounts of 219 UK quoted manufacturing companies over the period 1972-82. Data obtained by combining the EXSTAT tape with DATASTREAM on-line service. Unemployment rate by industry: Department of Employment Gazette. Employment tax borne by the firm, aggregate wage, aggregate male unemployment rate: from Layard and Nickell (1986). Minimum lending rate: from Economic trends. Corporate tax rate: from Annual Abstract of Statistics.	Preferred specification: dependent variable: wage bill divided by employment including non-wage labour costs in industry i at time t. Independent variables: firm's revenue per employee at t and at t-1, change in employment in firm i, lag log total unemployment and log industry unemployment, proportion of long-term unemployed, union mark-up, union density in industry, lag debt-equity ratio in firm i, lag minimum lending rate, deposit liabilities ratio in firm i, lag wage, aggregate wage.	They do not specifically conclude on this question, but they find a positive and significant coefficient for long-term unemployment. This supports the LN hypothesis. Limitations: the long-term unemployment variable is aggregated, there could be a more precise relationship at the regional level or industry level.

Table A.2.1 (ctd)

Blackaby, Bladen-Hovell and Symons (1991)	Family Expenditure Survey (FES) for 1980-86: annual random sample of approximately 11,000 households in the UK of which about 7,000 respond. A sample of 25,653 male employees aged between 16 and 65 is selected here. Data supplemented by quarterly regional unemployment rates based on duration (supplied by the Department of Employment). 11 regions. Regional Reward Survey for regional price indices.	(1) Dependent variable: normal hourly wage deflated by monthly national RPI. Independent variables: individual human capital characteristics (education, experience, marital status), regional level of unemployment and controls for industry, occupation and month of interview. (2) Ditto but with regional prices (change in income requires to hold the standard of living constant) divided by national price, long-term unemployment rate and non-linear terms in unemployment. (Various combinations of all these)	Find support for the LN hypothesis in specifications that omit regional fixed effects. They prefer these specifications as regional dummies act as "catch all" variables. Limitations: Specifications that omit regional dummies may lead to biased estimates because of omitted variables.

Table A.2.1 (ctd)

Jackman and Savouri (1991)	Department's of Employment New Earnings Survey, for wages (average hourly earnings of full-time adults whose wages were not affected by absence over the sample, excluding overtime payments) Department of Employment Gazette for unemployment data and for GDP deflator at factor cost. Regional Trends: for employment, economic activity and house prices and tenure. Regional Reward Survey for relative non-housing regional prices. Period: 1974-1989.	Preferred specifications are relative regional wage equations: $\log w_{it} - \log \overline{w}_t = (a_{0i} - \overline{a}_0) + a_1(\log u_{it} - \log \overline{u}_t)$ $+a_5(\log w_{it-1} - \log \overline{w}_{t-1}) + a_6(z_{it} - \overline{z}_t)$ i = region, t = time, w = real hourly wage excluding overtime (wage deflated by GDP deflator), u = unemployment rate, z = other factors affecting real wage. Vector z includes the proportion of male long-term unemployment, the relative regional cost-of-living excluding housing costs, the relative regional house prices, the relative regional house prices multiplied by the owner occupancy rate and the proportion of householders in the local authority rental sector. They also estimate an equation including the regional activity rate. 14 regional level earnings variables are considered (7 for males and 7 for females): all employees, manual employees, non-manual employees, manual employees in manufacturing, non-manual employees in manufacturing, manual employees not in manufacturing, non-manual employees not in manufacturing.	They do not conclude on the estimates they found for the proportion of long-term unemployment. They report the long-term unemployment coefficient only for males, for whom they find positive coefficients in the 7 cases, but all insignificant except when all employees are considered. This suggests that the effect of long-term unemployment is not the same depending on the category of workers considered Limitations: Study did not aim to test the hypothesis. Lack of degrees of freedom. No justifications concerning the inclusion of the "z" variables.

Table A.2.1 (ctd)

Blackaby and Hunt (1992)	1982 General Household Survey restricted to male employees. Regional unemployment rates and regional unemployment duration rates supplied by the Department of Employment. Regional cost-of-living data taken from Reward Regional Surveys.	Augmented Mincer earnings function: $\ln E_i = \alpha_0 + \alpha_1 s_i + \alpha_2 t + \alpha_3 t^2 + \alpha_4 m_i + \alpha_5 \ln h_i$ $+\alpha_6 \ln P_R + \alpha_7' Z_i + \alpha_8' Y_i + \beta' U_r + \varepsilon_i$ i = individual, r = 19 sub-regions, R = ten CSO standard regions, E = observed weekly earnings, s = number of years of schooling completed, t = number of years work experience, m = binary marriage dummy (1 = married, 0 = unmarried), h = number of hours worked, P cost-of-living index including housing costs, Z = vector of industry dummies, Y = vector of occupation dummies, U = vector of unemployment terms.	Find a "wage curve" (in the sense used by Blanchflower and Oswald, 1994) only in terms of short-term unemployment. Find support for the LN hypothesis: the long-term unemployment term is statistically significant and positive, even when non-linear terms in unemployment are included. When they separate short-term unemployment and long-term unemployment they find that long-term unemployment is not statistically significant, so that long-term unemployment did not have any effect on wages. Limitations: cross-section, bias due to omitted variables (no region dummies). Other bias. The long-term unemployment rate is used instead of the proportion of long-term unemployment.

Table A.2.1 (ctd)

Blackaby and Manning (1992)	Unemployment:Employment Gazette. Earnings: New Earnings Survey. Regional cost of living: Rewards Regional Surveys. Regional house prices: BSA bulletin. Regional GDP: Regional trends. Period: 1972-1988.	Model with one wage equation and one unemployment equation: $\Delta wp = \alpha_0 + \alpha_1 \Delta ru + \alpha_2 \Delta wp_{-1} + \alpha_3 \Delta ru_{-1}$ $+\alpha_4 \Delta ru52_{-1} + \alpha_5 \Delta rh_{-1} + \alpha_6 \Delta lh_{-1} + \alpha_7 wp_{-1}$ $+\alpha_8 ru_{-1} + \alpha_9 ru52_{-1} + \alpha_{10} lh_{-1} + \alpha_{11} rh_{-1} + \varepsilon_w$ $\Delta ru = \beta_0 + \beta_1 \Delta wp + \beta_2 \Delta ru_{-1} + \beta_3 \Delta ru52_{-1}$ $+\beta_4 \Delta wp_{-1} + \beta_5 \Delta rg_{-1} + \beta_6 ru_{-1} + \beta_7 ru52_{-1}$ $+\beta_8 wp_{-1} + \beta_9 rg_{-1} + \varepsilon_u$ with $wp = \ln(\frac{E_r}{\hat{E}_r})$ is the deviation of the log of actual earnings from predicted regional earnings. $\hat{E}_r = \sum_j \frac{N_{jr}}{N_r} \times E_j$ r = region, j = industry, E = weekly earnings, N = employment, $ru \equiv u_r - u$, $ru52 \equiv u52_r - u52$, $lh \equiv \ln(h_r/h)$, $rh \equiv \ln(p_r/p)$, $rg \equiv \ln(g_r/g)$ with u52 = percentage unemployed for more than 52 weeks, h_r = average regional house price, deflated by the retail price index, (p_r/p) = proportionate deviation of the regional cost-of-living from the national average, inclusive of housing costs and g_r = regional per capita GDP. For the ten standard mainland regions.	They estimate both equations separately, then by Full Information Maximum Likelihood (FIML) in order to take into account the interdependence between regional wages and unemployment. They find supportive evidence for the LN hypothesis. Limitations: They use a constructed variable: $\hat{E}_r$. The results may be influenced by the measure of prices used.

Table A.2.1 (ctd)

Christofides and Oswald (1992)	Data on contracts reached between 420 establishments and 68 unions across a variety of Canadian industries, between 1978Q1 and 1984Q4. Data obtained from Labour Canada.	Idea: "pay is shaped by a mixture of internal and external pressures". $\Delta W_{it} = \alpha \Delta W_{it-1} + \beta UR_{jt} + \gamma \Delta P_{kt} + \delta \Delta Z_t + v_{it}$ All variables are entered in logarithms. Contract begins at time t for bargaining pair i, region j, product market k. W = real wage (hourly), UR = unemployment rate, P = measure of prosperity, Z = vector of all other relevant variables (which also may be indexed i, j or k). Specification of interest here: prosperity variables: profits/employment, industry prices. Unemployment variables: national unemployment rate, long-term unemployment/total unemployment, (regional unemployment). Other variables: last contract wage, outside wage, constant.	The coefficient of the long-term unemployment variable is not significantly different from zero. It has the wrong sign for the LN hypothesis. Limitations: long-term unemployment is defined as a spell of unemployment of either six months or one year. There are few years. They use the national measure of the proportion of long-term unemployment.
Blanchflower and Oswald (1994a)	General Household Survey. Regional Reward for consumer price index and required income or cost-of-living-including-housing index (RPIH). Department of Employment for unemployment data. Period: 1974-1990.	Wage equation. Dependent variable: weekly nominal wage. Independent variables: log unemployment, log price indices (see data description), long-term unemployment as a proportion of total unemployment, lag wage, regional dummies, and various control variables (ten industry variables, four marital status variables, fifteen qualification variables, sixteen year dummies, gender, experience and its square, part-time, eleven month-of-interview variables, race variable eleven region dummies interacted with dummy for years up to 1977 plus a constant). Another estimation includes lag log RPIH.	The coefficient on the proportion of long-term unemployment has the sign corresponding to the LN hypothesis, but it is never statistically significantly different from zero. Limitations: limited number of degrees of freedom (data used here as a panel of ten regions across seventeen years).

Table A.2.1 (ctd)

Graafland (1991)	Main source: Central Planning Bureau (Netherlands). Number of vacancies: Ministry of Social Affairs and Central Bureau of Statistics. Replacement ratios: Ministry of Economic Affairs. Unemployment series: labour offices. Period: 1966-87.	Model includes a U-V equation, a wage equation, an employment equation, and an equation of the incidence of long-term unemployment. Wage equation estimated: dependent variable = wage, independent variables = ratio of value added prices to consumer prices, labour productivity, rate of income taxes and social premiums, short-term unemployment rate and level, long-term unemployment rate and level, lag wage. All variables are in logs except rate of unemployment and of long-term unemployment.	The wage level appears to be significantly negatively influenced by the rate of long-term unemployment. Long-term unemployment does not have a different effect on wages compared to short-term unemployment. Limitation: He uses long-term unemployment rate while all other studies take the proportion of long-term unemployment to find a composition effect. Time-series analysis.
Blanchflower and Oswald (1994b)	International Social Survey Programme: Austria (1986 and 1989). Long-term unemployment proportion obtained from Rudolph Winter-Ebmer.	Dependent variable: monthly earnings. Independent variables: log unemployment, long-term unemployment region dummies and control variables (union membership dummy, four marital status dummies, nine occupation dummies, year dummy, gender dummy, age and its square, part-time dummy and five qualification dummies and a constant).	The coefficient on the long-term unemployment variable is found to be positive but insignificant. Limitations: no prices, only two years of data.
Partridge and Rickman (1997)	Data from 48 states for the 1976-91 period. Long-term unemployment data comes from "Geographic Profile of Employment and Unemployment". Panel data analysis.	Wage equation (estimated through various econometric methods). Dependent variable: average annual earnings. Independent variables: long-term unemployment proportion, unemployment rate, vector of controls for human capital and labour market characteristics, lag wage.	Find that the coefficient on long-term unemployment is generally positive and significant. Limitations: Result not robust to all models estimated. Use annual earnings.

Appendix B: Data sources

The data are a panel of 10 standard UK regions over 23 years (1973-1995).

- Wages (nominal regional hourly wage calculated by dividing weekly wage by weekly hours), the share of employment in manufacturing and long-term unemployment for the period 1973-1983 come from Regional Trends.

- Male unemployment rate and long-term unemployment proportion (for 1984-1995) have been taken out of the NOMIS database.[1]

- The Department of the Environment provided house prices and building societies advances.

- The consumer prices have been obtained from the Reward Group publication.

- Years of schooling have been calculated from the General Household Survey by David Blanchflower.

- Weekly wages for skilled and unskilled occupations were found in the New Earnings Survey.

- National retail price index (all items) from Office of National Statistics.

[1] Data kindly provided by Anne Green, Institute for Employment Research, University of Warwick

Appendix C: Tables of secondary results

Table C.2.1: Panel estimation of regional wage equations. Britain 1976-1995. Dependent variable: log nominal hourly wage for men. Model 1.

	Manuals excluding overtime	Manuals including overtime	Non-manuals excluding overtime	Non-manuals including overtime
Constant	0.179**	0.190**	0.188**	0.243**
	(0.040)	(0.038)	(0.052)	(0.052)
Log unemployment (-1)	-0.014	-0.017	-0.012	-0.025
	(0.012)	(0.011)	(0.016)	(0.017)
Log unemployment (-2)	-0.032*	-0.027	-0.034	-0.013
	(0.019)	(0.017)	(0.025)	(0.024)
Log wage (-1)	0.554**	0.554**	0.486**	0.500**
	(0.071)	(0.070)	(0.073)	(0.075)
Log wage (-2)	0.240**	0.254**	0.321**	0.352**
	(0.061)	(0.062)	(0.071)	(0.073)
Log long-term unemployment (-1)	0.081**	0.082**	0.095**	0.062**
	(0.021)	(0.019)	(0.028)	(0.027)
Log long-term unemployment (-2)	-0.022*	-0.027**	-0.013	-0.007
	(0.013)	(0.012)	(0.015)	(0.015)
Region dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
Long-term elasticity of wage to unemployment	-0.227	-0.228	-0.239	-0.256
Long-term elasticity of wage to the proportion of long-term unemployment	0.286	0.283	0.424	0.375
Test for first-order serial correlation:	-1.278	-0.822	0.980	.825
Test for second-order serial correlation:	-1.488	-1.467	-1.263	-0.788
Residual sum of squares	0.012	0.011	0.024	0.023
Total sum of squares	42.628	43.310	54.212	43.749
Wald test of joint significance (df = 6)	707.306	861.239	518.093	438.925
Wald test - jt sig of time dums (df = 19)	861.216	1325.391	952.886	1907.242
Wald test - jt sig of region dums (df = 9)	36.544	39.732	30.751	19.516
Wald test - jt sig of both dums (df = 28)	1622.187	3185.259	1216.675	2288.357

See notes on table 2.3.

Table C.2.2: Panel estimation of regional wage equations. Britain 1976-95.
Dependent variable: log nominal hourly wage for men.
All occupations.

	(1)	(2)	(3)	(4)	(5)
Constant	0.213**	-3.208	0.198**	0.206**	0.312**
	(0.029)	(4.112)	(0.029)	(0.029)	(0.027)
Log wage (-1)	0.520**	0.436**	0.515**	0.516**	0.583**
	(0.081)	(0.102)	(0.080)	(0.080)	(0.083)
Log wage (-2)	0.385**	0.392**	0.381**	0.382**	0.345**
	(0.076)	(0.083)	(0.074)	(0.074)	(0.078)
Log unemployment (-1)	-0.030**	-0.005	-0.003	-0.017*	-0.030**
	(0.006)	(0.015)	(0.015)	(0.009)	(0.007)
Log proportion of long-term unemployment (-1)	0.049**	0.037**	0.046**	0.046**	
	(0.010)	(0.013)	(0.009)	(0.009)	
Log house prices (-1)		0.056**			
		(0.018)			
Log consumer prices		0.288			
		(0.396)			
(Log unemployment (-1))^2			-0.006*		
			(0.003)		
(Log unemployment (-1))^3				-0.001*	
				(0.0006)	
Long-term unemployment (-1)					0.001**
					(0.0003)
Region dummies	yes	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes	yes
Long-term elasticity of wage to unem.	-0.316	-0.029	-0.144	-0.314	-0.417
Long-term elasticity of wage to the proportion of long-term unemployment	0.515	0.215	0.442	0.451	0.486
First-order serial correlation	-0.966	-1.178	-1.028	-1.049	-0.959
Second-order serial correlation	-1.441	-0.680	-1.572	-1.569	-0.644
Residual sum of squares	0.015	0.015	0.015	0.015	0.016
Total sum of square	52.799	52.799	52.799	52.799	52.799
Wald test of joint significance	1212.791	1370.317	1329.824	1320.145	998.806
Wald test - jt sig of time dums (df = 19)	2038.395	1184.745	2108.688	2106.881	2061.937
Wald test - jt sig of region dums (df = 9)	32.261	25.641	36.705	36.125	21.970
Wald test - jt sig of both dums (df = 28)	2342.927	2467.052	2432.064	2427.489	2293.043

See notes on table 2.3.

Table C.2.3: Panel estimation of regional wage equations. Britain 1976-95.
Dependent variable: log nominal hourly wage for men.
Replacing log of the proportion of long-term unemployment with the proportion of long-term unemployment.

	Manuals excluding overtime	Manuals including overtime	Non-manuals excluding overtime	Non-manuals including overtime
Constant	0.285**	0.274**	0.347**	0.357**
	(0.022)	(0.021)	(0.030)	(0.030)
Log unemployment (-1)	-0.029**	-0.026**	-0.031**	-0.030**
	(0.008)	(0.007)	(0.009)	(0.010)
Log wage (-1)	0.620**	0.638**	0.547**	0.535**
	(0.067)	(0.064)	(0.076)	(0.078)
Log wage (-2)	0.219**	0.214**	0.315**	0.338**
	(0.060)	(0.058)	(0.071)	(0.073)
Long-term unemployment (-1)	0.001**	0.001**	0.001**	0.001**
	(0.0003)	(0.0003)	(0.0004)	(0.0004)
Region dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
Long-term elasticity of wage to unemployment	-0.181	-0.178	-0.222	-0.238
Long-term elasticity of wage to the proportion of long-term unemployment	0.250	0.266	0.393	0.302
Test for first-order serial correlation	-1.583	-1.102	1.057	0.713
Test for second-order serial correlation	-1.254	-1.322	-0.654	-0.440
Residual sum of squares	0.013	0.011	0.025	0.024
Total sum of squares	42.628	43.310	54.212	43.749
Wald test of joint significance (df = 4)	559.207	634.343	453.304	386.302
Wald test - jt sig of time dums (df = 19)	1314.267	1723.759	1077.489	1982.479
Wald test - jt sig of region dums (df = 9)	28.33	29.51	20.905	18.497
Wald test - jt sig of both dums (df = 28)	1801.263	2796.574	1268.683	2375.148

See notes on table 2.3.

Table C.2.4: Panel estimation of regional wage equations. Britain 1976-1995. Dependent variable: log nominal hourly wage for men. Introduction of non-linear terms.

	Manuals excluding overtime	Manuals including overtime	Non-manuals excluding overtime	Non-manuals including overtime
Introduction of (log unemployment)^2				
Constant	0.206**	0.193**	0.202**	0.237**
	(0.022)	(0.020)	(0.033)	(0.080)
Log wage (-1)	0.570**	0.575**	0.504**	0.509**
	(0.159)	(0.069)	(0.072)	(0.076)
Log wage (-2)	0.254**	0.253**	0.322**	0.356**
	(0.062)	(0.060)	(0.068)	(0.071)
Log unemployment (-1)	-0.035**	-0.021	0.013	-0.004
	(0.016)	(0.013)	(0.024)	(0.023)
Log of proportion of long-term unemployment (-1)	0.041**	0.039**	0.053**	0.044**
	(0.008)	(0.015)	(0.012)	(0.01)
[Log unemployment (-1)]^2	0.001	-0.001	-0.010*	-0.006
	(0.003)	(0.003)	(0.005)	(0.005)
Region dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
Unemployment elasticity of wages	-0.182	-0.138	0.042	-0.127
Long-term unemployment elasticity of wages	0.235	0.230	0.306	0.326
No serial correlation				
Residual sum of squares	0.013	0.011	0.023	0.023
Total sum of squares	42.628	43.310	54.212	43.749
Introduction of (log unemployment)^3				
Constant	0.205**	0.195**	0.215**	0.245**
	(0.021)	(0.020)	(0.031)	(0.033)
Log wage (-1)	0.570**	0.575**	0.505**	0.510**
	(0.070)	(0.069)	(0.072)	(0.076)
Log wage (-2)	0.255**	0.253**	0.324**	0.357**
	(0.062)	(0.060)	(0.068)	(0.071)
Log unemployment (-1)	-0.032**	-0.024**	-0.009	-0.018
	(0.010)	(0.009)	(0.015)	(0.014)
Log of proportion of long-term unemployment (-1)	0.041**	0.040**	0.053**	0.044**
	(0.008)	(0.008)	(0.012)	(0.012)
[Log unemployment (-1)]^3	0.0003	-0.0001	-0.001*	-0.0009
	(0.0005)	(0.0005)	(0.0008)	(0.0008)
Region dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
Unemployment elasticity of wages	-0.161	-0.156	-0.189	-0.248
Long-term unemployment elasticity of wages	0.236	0.232	0.314	0.332
No serial correlation				
Residual sum of squares	0.013	0.011	0.023	0.023
Total sum of squares	42.628	43.310	54.212	43.749

See notes on table 2.3.

Table C.2.5: Panel estimation of regional wage equations. Britain 1976-95.
Dependent variable: log nominal hourly wage for men.
The Effect of the Share of Manufacturing in Regional Employment.

	Manuals excluding overtime	Manuals including overtime	Non-manuals excluding overtime	Non-manuals including overtime
Constant	0.186**	0.163**	0. 262**	0.313**
	(0.032)	(0.028)	(0.050)	(0.054)
Log unemployment (-1)	-0.027**	-0.024**	-0.032**	-0.034**
	(0.007)	(0.007)	(0.009)	(0.009)
Log wage (-1)	0.570**	0.572**	0.494**	0.488**
	(0.070)	(0.067)	(0.075)	(0.078)
Log wage (-2)	0.251**	0.260**	0.333**	0.359**
	(0.060)	(0.058)	(0.068)	(0.071)
Log long-term unemployment (-1)	0.041**	0.042**	0.057**	0.044**
	(0.008)	(0.008)	(0.011)	(0.012)
Share of manufacturing in employment	0.0004	0.0007	-0.0007	-0.001
	(0.008)	(0.0005)	(0.0007)	(0.0007)
Region dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
Long-term elasticity of wage to unemployment	-0.155	-0.147	-0.184	-0.225
Long-term elasticity of wage to the proportion of long-term unemployment	0.231	0.253	0.328	0.294
Test for first-order serial correlation:	-0.931	-0.319	1.014	0.681
Test for second-order serial correlation:	-1.457	-1.530	-1.170	-0.677
Residual sum of squares	0.013	0.011	0.024	0.023
Total sum of squares	42.628	43.310	54.212	43.749
Wald test of joint significance (df = 5)	646.209	761.594	520.329	434.261
Wald test - jt sig of time dums (df = 19)	1237.045	1726.144	1116.278	2208.754
Wald test - jt sig of region dums (df = 9)	24.733	32.429	25.244	20.653
Wald test - jt sig of both dums (df = 28)	1712.400	2838.880	1356.007	2666.359

See notes on table 2.3.

Table C.2.6: Panel estimation of regional wage equations. Britain 1976-95.
Dependent variable: log nominal hourly wage for men.
The Effect of years of schooling.

	Manuals excluding overtime	Manuals including overtime	Non-manuals excluding overtime	Non-manuals including overtime
Constant	2.344	2.178	6.575**	5.597**
	(1.825)	(1.688)	(2.968)	(2.562)
Log wage (-1)	0.523**	0.543**	0.410**	0.413**
	(0.082)	(0.078)	(0.088)	(0.096)
Log wage (-2)	0.257**	0.253**	0.307**	0.294**
	(0.065)	(0.066)	(0.092)	(0.092)
Log proportion of long-term unemployment (-1)	0.037**	0.038**	0.060**	0.045**
	(0.011)	(0.011)	(0.015)	(0.014)
Log unemployment rate (-1)	-0.039**	-0.037**	-0.025**	-0.026*
	(0.011)	(0.009)	(0.015)	(0.014)
Years of schooling	-0.383	-0.356	-1.221**	-1.015**
	(0.349)	(0.322)	(0.576)	(0.495)
Years of schooling squared	0.017	0.016	0.059**	0.049**
	(0.017)	(0.015)	(0.028)	(0.024)
Region dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
Long-term elasticity of wage to unemployment	-0.177	-0.181	-0.117	-0.089
Long-term elasticity of wage to the proportion of long-term unemployment	0.168	0.186	0.212	0.153
First-order serial correlation	-1.517	-0.916	0.693	0.855
Second-order serial correlation	-0.683	-0.579	-1.731	-1.243
Residual sum of squares	0.009	0.008	0.019	0.017
Total sum of square	23.221	23.762	29.662	22.231
Wald test of joint significance (df = 8)	429.901	577.859	260.268	156.122
Wald test - jt sig of time dums (df = 19)	880.115	1328.541	737.926	1621.825
Wald test - jt sig of region dums (df = 9)	30.210	30.354	25.216	22.001
Wald test - jt sig of both dums (df = 28)	1129.827	1952.371	1089.546	2340.902

See notes on table 2.3.

Table C.2.7: Panel estimation of regional wage equations. Britain 1976-95.
Dependent variable: log nominal hourly wage for men.
The Effect of the Growth of the Share of Manufacturing in Regional Employment.

	Manuals excluding overtime	Manuals including overtime	Non-manuals excluding overtime	Non-manuals including overtime
Constant	0.199**	0.190**	0.232**	0.263**
	(0.021)	(0.020)	(0.032)	(0.034)
Log wage (-1)	0.571**	0.573**	0.493**	0.492**
	(0.069)	(0.068)	(0.074)	(0.076)
Log wage (-2)	0.269**	0.285**	0.330**	0.358**
	(0.060)	(0.060)	(0.067)	(0.070)
Log proportion of long-term unemployment (-1)	0.043**	0.044**	0.057**	0.046**
	(0.008)	(0.008)	(0.011)	(0.012)
Log unemployment rate (-1)	-0.029**	-0.026**	-0.030**	-0.031**
	(0.007)	(0.006)	(0.009)	(0.009)
Growth of share of manufacturing	0.060	0.080**	-0.068	-0.069
	(0.037)	(0.031)	(0.053)	(0.046)
Region dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
Long-term elasticity of wage to unemployment	-0.181	-0.183	-0.169	-0.207
Long-term elasticity of wage to the proportion of long-term unemployment	0.269	0.310	0.322	0.307
First-order serial correlation	-0.923	-0.281	0.778	0.377
Second-order serial correlation	-1.353	-1.457	-1.228	-0.830
Residual sum of squares	0.013	0.011	0.024	0.023
Total sum of square	42.628	43.310	54.212	43.749
Wald test of joint significance (df = 5)	677.399	805.183	523.851	449.777
Wald test - jt sig of time dums (df = 19)	1279.145	1829.353	1141.624	2196.880
Wald test - jt sig of region dums (df = 9)	34.630	35.596	32.959	25.017
Wald test - jt sig of both dums (df = 28)	1707.031	2708.625	1373.752	2592.500

See notes on table 2.3.

Table C.2.8: Panel estimation of regional wage equations. Britain 1976-95.
Dependent variable: log real hourly wage for men.
Model with prices and manufacturing.

	Manuals excluding overtime	Manuals including overtime	Non-manuals excluding overtime	Non-manuals including overtime
Constant	0.164*	0.170**	0.465**	0.368**
	(0.088)	(0.067)	(0.230)	(0.151)
Log real wage (-1)	0.570**	0.552**	0.349**	0.386**
	(0.085)	(0.075)	(0.130)	(0.101)
Log real wage (-2)	0.269**	0.271**	0.248**	0.320**
	(0.062)	(0.060)	(0.114)	(0.091)
Log proportion of long-term unemployment (-1)	0.043**	0.039**	0.025	0.018
	(0.014)	(0.011)	(0.032)	(0.025)
Log unemployment rate (-1)	-0.025*	-0.018*	0.031	0.017
	(0.013)	(0.010)	(0.040)	(0.029)
Log house prices/RPI (-1)	0.012	0.021*	0.110**	0.087**
	(0.017)	(0.013)	(0.050)	(0.033)
Log consumer prices/RPI	-0.069	0.061	0.899	0.657
	(0.369)	(0.235)	(0.996)	(0.692)
Growth of share of manufacturing	0.066*	0.082**	-0.029	-0.032
	(0.038)	(0.032)	(0.054)	(0.044)
Region dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
First-order serial correlation	-0.946	-0.200	1.037	0.522
Second-order serial correlation	-1.410	-0.910	0.794	0.360
Residual sum of squares	0.013	0.010	0.044	0.033
Total sum of square	1.255	1.345	4.070	2.097
Wald test of joint significance (df = 7)	691.566	920.668	457.621	460.795
Wald test - jt sig of time dums (df = 19)	1599.689	1848.036	535.098	1386.823
Wald test - jt sig of region dums (df = 9)	36.928	41.694	31.643	33.961
Wald test - jt sig of both dums (df = 28)	1804.172	2109.323	799.713	2224.102

See notes on table 2.3.
Instruments: log real wage (-1) and (-2), log proportion of long-term unemployment (-1), log unemployment rate (-1), log advances/RPI (-1), log consumer prices/RPI (-1), growth in the share of manufacturing.

Table C.2.9: Panel estimation of regional wage equations: Britain 1976-95.
Dependent variable: log nominal hourly wage for men.
Difference between manuals and non-manuals.

	Excluding overtime	Including overtime
Constant	0.783	-0.625
	(3.829)	(2.454)
Log wage (-1)	0.570**	0.552**
	(0.085)	(0.075)
Log wage (-2)	0.269**	0.271**
	(0.062)	(0.060)
Log proportion of long-term unemployment (-1)	0.043**	0.039**
	(0.014)	(0.011)
Log unemployment rate (-1)	-0.025*	-0.018*
	(0.013)	(0.010)
Log house prices (-1)	0.012	0.021*
	(0.017)	(0.013)
Log consumer prices	-0.069	0.061
	(0.369)	(0.235)
Growth of share of manufacturing	0.066*	0.082**
	(0.038)	(0.032)
Region dummies	yes	yes
Time dummies	yes	yes
(NM) Constant	-10.599	-6.524
	(11.047)	(7.560)
(NM) Log wage (-1)	-0.221	-0.166
	(0.155)	(0.125)
(NM) Log wage (-2)	-0.021	0.049
	(0.130)	(0.109)
(NM) Log proportion of long-term unemployment (-1)	-0.017	-0.021
	(0.035)	(0.028)
(NM) Log unemployment rate (-1)	0.056	0.035
	(0.043)	(0.030)
(NM) Log house prices (-1)	0.098*	0.066**
	(0.053)	(0.036)
(NM) Log consumer prices	0.968	0.596
	(1.062)	(0.731)
(NM) Growth of share of manufacturing	-0.095	-0.114**
	(0.066)	(0.054)
(NM) Region dummies	yes	yes
(NM) Time dummies	yes	yes
Wald test on (NM) economic variables (df = 8)	17.399	31.906
Wald test on (NM) region dummies (df = 9)	**5.903**	**3.740**
Wald test on (NM) time dummies (df = 19)	93.326	783.067

See notes on table 2.3 and note 1 on table 2.4.

Table C.2.10: Panel estimation of regional wage equations. Britain 1976-95.
Dependent variable: log nominal hourly wage for men.
Composition effect.

	Manuals excluding overtime	Manuals including overtime	Non-manuals excluding overtime	Non-manuals including overtime
Constant	-0.067	-1.269	-9.256	-6.943
	(3.044)	(2.236)	(8.968)	(6.357)
Log wage (-1)	0.581**	0.569**	0.345**	0.385**
	(0.083)	(0.077)	(0.127)	(0.099)
Log wage (-2)	0.247**	0.247**	0.259**	0.323**
	(0.059)	(0.058)	(0.102)	(0.086)
Log long-term unemployment rate (-1)	0.020**	0.020**	0.029**	0.019*
	(0.007)	(0.006)	(0.011)	(0.010)
Log short-term unemployment rate (-1)	-0.041**	-0.034**	-0.003	-0.003
	(0.016)	(0.013)	(0.042)	(0.032)
Log house prices (-1)	0.021	0.029**	0.108**	0.087**
	(0.014)	(0.012)	(0.040)	(0.027)
Log consumer prices	0.021	0.131	0.860	0.648
	(0.294)	(0.214)	(0.863)	(0.616)
Growth of share of manufacturing	0.054	0.072**	-0.029	-0.032
	(0.038)	(0.032)	(0.055)	(0.045)
Region dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
Long-term elasticity of wage to short-term unemployment	-0.238	-0.185	-7.576E-3	-0.010
Long-term elasticity of wage to long-term unemployment	0.116	0.109	0.073	0.065
First-order serial correlation	-1.320	-0.551	1.127	0.548
Second-order serial correlation	-1.107	-0.417	0.866	0.383
Residual sum of squares	0.013	0.011	0.042	0.032
Total sum of square	42.628	43.310	54.212	43.749
Wald test of joint significance (df = 7)	703.286	911.189	452.149	211.984
Wald test - jt sig of time dums (df = 19)	1227.489	1460.398	540.032	640.367
Wald test - jt sig of region dums (df = 9)	22.129	21.922	19.297	**12.710**
Wald test - jt sig of both dums (df = 28)	1868.043	2686.285	1026.942	1327.846

See notes on table 2.3.
Instruments: log wage (-1) and (-2), log long-term unemployment rate (-1), log short-term unemployment rate (-1), log advances (-1), log consumer prices (-1), growth in the share of manufacturing.

Table C.2.11: Panel estimation of regional wage equations. Britain 1976-95.
Dependent variable: log nominal hourly wage for men.
Adding the change in the unemployment rate.

	Manuals excluding overtime	Manuals including overtime	Non-manuals excluding overtime	Non-manuals including overtime
Constant	0.824	-0.516	-9.857	-7.165
	(3.788)	(2.372)	(10.455)	(7.117)
Log wage (-1)	0.573**	0.557**	0.345**	0.377**
	(0.084)	(0.073)	(0.136)	(0.101)
Log wage (-2)	0.279**	0.292**	0.246**	0.317**
	(0.060)	(0.056)	(0.117)	(0.091)
Log proportion of long-term unemployment (-1)	0.039**	0.033**	0.026	0.020
	(0.015)	(0.011)	(0.031)	(0.026)
Log unemployment rate (-1)	-0.025*	-0.018*	0.031	0.017
	(0.013)	(0.010)	(0.041)	(0.029)
Log house prices (-1)	0.017	0.029**	0.109**	0.085**
	(0.019)	(0.013)	(0.051)	(0.035)
Log consumer prices	-0.076	0.047	0.906	0.663
	(0.366)	(0.228)	(1.009)	(0.691)
Growth of share of manufacturing	0.059	0.071**	-0.026	-0.026
	(0.040)	(0.035)	(0.054)	(0.043)
Change in unemployment rate	-0.002	-0.004**	0.001	0.001
	(0.002)	(0.001)	(0.002)	(0.002)
Region dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
Long-term elasticity of wage to the proportion of long-term unemployment	0.263	0.218	0.063	0.065
First-order serial correlation	-0.559	0.017	1.079	0.581
Second-order serial correlation	-1.382	-0.980	0.800	0.401
Residual sum of squares	0.013	0.010	0.044	0.033
Total sum of square	42.628	43.310	54.212	43.749
Wald test of joint significance (df = 8)	682.682	673.824	459.128	210.578
Wald test - jt sig of time dums (df = 19)	1085.373	822.874	561.486	653.683
Wald test - jt sig of region dums (df = 9)	25.212	21.898	**15.597**	**11.796**
Wald test - jt sig of both dums (df = 28)	1618.637	1189.421	1020.968	1237.360

See notes on table 2.3.
Instruments: log wage (-1) and (-2), log propotion of long-term unemployment (-1), log unemployment rate (-1), log advances (-1), log consumer prices (-1), growth in the share of manufacturing, change in unemployment rate.

Table C.2.12: Panel estimation of regional wage equations. Britain 1978-95.
Dependent variable: log nominal hourly wage for men.
Using the proportion of long-term unemployment in population at risk.

	Manuals excluding overtime	Manuals including overtime	Non-manuals excluding overtime	Non-manuals including overtime
Constant	0.676	-0.672	-11.622	-7.699
	(3.704)	(2.821)	(14.169)	(9.122)
Log wage (-1)	0.570**	0.573**	0.434**	0.458**
	(0.098)	(0.091)	(0.145)	(0.104)
Log wage (-2)	0.204**	0.188**	0.154*	0.273**
	(0.077)	(0.075)	(0.092)	(0.078)
Log "true"proportion of long-term unemployment (-1)	0.056*	0.039	-0.001	-0.018
	(0.031)	(0.025)	(0.112)	(0.081)
Log unemployment rate (-1)	-0.044*	-0.026	0.041	0.027
	(0.024)	(0.019)	(0.095)	(0.064)
Log house prices (-1)	0.012	0.023*	0.112*	0.087**
	(0.018)	(0.014)	(0.066)	(0.041)
Log consumer prices	-0.063	0.060	1.062	0.703
	(0.354)	(0.269)	(1.354)	(0.876)
Growth of share of manufacturing	0.036	0.051	-0.026	-0.029
	(0.036)	(0.033)	(0.061)	(0.050)
Region dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
Long-term elasticity of wage to unemployment	-0.195	-0.109	0.100	0.100
Long-term elasticity of wage to the proportion of long-term unemployment	0.248	0.163	-2.427E-3	-0.067
First-order serial correlation	0.400	-0.171	0.036	-0.252
Second-order serial correlation	**-1.958**	-1.270	0.774	0.374
Residual sum of squares	0.013	0.010	0.050	0.031
Total sum of square	26.411	26.798	34.640	28.045
Wald test of joint significance (df = 8)	357.763	421.223	262.937	341.101
Wald test - jt sig of time dums (df = 19)	376.041	531.463	319.930	957.749
Wald test - jt sig of region dums (df = 9)	29.963	32.924	20.714	18.523
Wald test - jt sig of both dums (df = 28)	993.227	1769.905	824.255	2390.708

See notes on table 2.3.
Instruments: log wage (-1) and (-2), log "true" propotion of long-term unemployment (-1), log unemployment rate (-1), log advances (-1), log consumer prices (-1), growth in the share of manufacturing.

Table C.2.13: Panel estimation of regional wage equations. Britain 1976-95.
Dependent variable: log nominal hourly wage for men.
Checking for Parameters Constancy.

	Manuals excluding overtime	Manuals including overtime	Non-manuals excluding overtime	Non-manuals including overtime
Constant	-11.288	-13.839**	-10.244	-5.241
	(8.124)	(7.012)	(7.035)	(6.233)
Log wage (-1)	0.122	0.020	0.393**	0.437**
	(0.186)	(0.187)	(0.117)	(0.113)
Log wage (-2)	-0.027	0.096	0.138**	0.216**
	(0.166)	(0.153)	(0.089)	(0.104)
Log proportion of long-term unemployment (-1)	0.033*	0.043**	0.043**	0.033*
	(0.020)	(0.018)	(0.015)	(0.017)
Log unemployment rate (-1)	-0.084	-0.077*	0.002	-0.006
	(0.057)	(0.045)	(0.029)	(0.027)
Log house prices (-1)	-0.134	-0.116	0.058	0.055
	(0.107)	(0.082)	(0.056)	(0.054)
Log consumer prices	0.790	0.952**	0.668	0.333
	(0.563)	(0.468)	(0.523)	(0.480)
Growth of share of manufacturing	0.110**	0.101**	0.019	-0.014
	(0.054)	(0.044)	(0.046)	(0.050)
Region dummies	yes	yes	yes	yes
Time dummies	yes	yes	yes	yes
(B) Log wage (-1)	0.106	0.180	-0.323	-0.341*
	(0.282)	(0.277)	(0.207)	(0.179)
(B) Log wage (-2)	0.122	0.0002	0.056	-0.042
	(0.187)	(0.202)	(0.138)	(0.141)
(B) Log proportion of long-term unemployment (-1)	-0.018	-0.025	-0.007	-0.010
	(0.028)	(0.029)	(0.022)	(0.023)
(B) Log unemployment rate (-1)	0.101	0.107	0.061	0.044
	(0.078)	(0.066)	(0.066)	(0.059)
(B) Log house prices (-1)	0.333	0.366*	0.119	0.021
	(0.207)	(0.191)	(0.147)	(0.123)
(B) Log consumer prices	0.172	0.215	0.225*	0.164*
	(0.161)	(0.166)	(0.125)	(0.088)
(B) Growth of share of manufacturing	-0.158*	-0.106	-0.076	0.031
	(0.090)	(0.091)	(0.098)	(0.085)
(B) Region dummies	yes	yes	yes	yes
First-order serial correlation	0.186	-0.309	-0.331	0.193
Second-order serial correlation	-0.553	-0.531	-1.197	-1.249
Wald test on break variables (B) (df = 16)	**25.530**	32.235	55.582	61.274
Wald test on (B) economic variables (df = 7)	**12.304**	14.212	**7.104**	14.219
Wald test on (B) region dummies (df = 9)	17.072	21.564	**9.700**	18.530

See notes on table 2.3.
Instruments: log wage (-1) and (-2), log propotion of long-term unemployment (-1), log unemployment rate (-1), log advances (-1), log consumer prices (-1), growth in the share of manufacturing.

Table C.2.14: Panel estimation of regional wage equations. Britain 1976-95.
Dependent variable: log nominal weekly wage for men.
Difference between skilled and unskilled occupations.

	Coefficient (standard error)
Constant	1.561**
	(0.223)
Log wage (-1)	0.329**
	(0.076)
Log wage (-2)	0.279**
	(0.060)
Log proportion of long-term unemployment (-1)	0.090**
	(0.014)
Log proportion of long-term unemployment (-2)	-0.040**
	(0.014)
Log unemployment rate (-1)	-0.041**
	(0.008)
Log house prices (-2)	0.018
	(0.014)
Growth of share of manufacturing	0.062
	(0.041)
Region dummies	yes
Time dummies	yes
(Skilled) Constant	-0.571
	(0.371)
(Skilled) Log wage (-1)	-0.033
	(0.129)
(Skilled) Log wage (-2)	0.025
	(0.120)
(Skilled) Log proportion of long-term unemployment (-1)	-0.029
	(0.022)
(Skilled) Log proportion of long-term unemployment (-2)	0.061*
	(0.033)
(Skilled) Log unemployment rate (-1)	0.038**
	(0.016)
(Skilled) Log house prices (-2)	0.057**
	(0.023)
(Skilled) Growth of share of manufacturing	-0.131
	(0.088)
(Skilled) Region dummies	yes
(Skilled) Time dummies	yes
Wald test on (Skilled) economic variables (df = 8)	59.137
Wald test on (Skilled) region dummies (df = 9)	24.615
Wald test on (Skilled) time dummies (df = 19)	106.543

See notes on tables 2.3 and 2.6.

Chapter three

The Flexibility of Unemployed People during Job Search

3.1 Introduction

This chapter is interested in determining empirically how unemployed people's characteristics may influence the way they carry out their job search (i.e. their flexibility) and consequently the length of an unemployment spell. We assume that decisions taken during job search (such as mobility and level of pay) influence the duration of unemployment and we look at the determinants of these decisions. We are particularly interested in the determinants of mobility. Recent papers have singled out certain factors such as housing tenure as its main determinants. It has, however, been pointed out that factors such as the family structure or psychological factors also influence decisions on mobility. We use the National Child Development Study (NCDS) data set which contains a number of variables which are not readily available in other data sets and measure these other factors. Moreover, we consider that the mobility decision is made in conjunction with other choices which have to be made when looking for a job. This issue has not been looked at before. It is therefore potentially interesting to study whether results concerning the determinants of job search behaviour are affected by such a hypothesis.

This chapter studies the determinants of the willingness of unemployed people to move (i.e. change house) to take a new job, to accept a lower level of pay than in their previous job and to accept a lower skill content in their new job. We find that these three decisions are significantly related. Models which take this into account are therefore more efficient that those that do not. We find evidence that people who have experienced past unemployment are more willing to move. Skilled manuals are found to be constrained in moving. Women who have a partner are less likely to consider moving, while men are not and are even more likely to consider it if their partner does not work.

Section 3.2 reviews related studies, section 3.3 introduces the data and the econometric model, section 3.4 provides the analysis of the results, and section 3.5 concludes.

3.2 Review of related literature

Within the literature on job search, theoretical models analyse choices that employed and/or unemployed individuals make to maximise the expected value of their job search. We consider three choices. First, individuals select a reservation wage. This is the most obvious choice variable, and it has been studied extensively (see, among others, Thomas, 1998). Second, individuals decide on the location of the job, in other words whether they are prepared to move and/or migrate. A strand of the literature on job search has been interested in this issue (see for example Hey and McKenna, 1979). Third, individuals make a decision on the type of job they would accept. For example, they consider the level of responsibility involved, the working conditions, the type of skills required, etc. This latter choice variable has been studied under the generic term of job or firm "characteristics" (Kahn and Low, 1988). We review below studies which aim to identify the determinants of these choices. Compared to these studies, which generally analyse one or two choices, we will study the determinants of three simultaneous decisions.

3.2.1 Mobility decisions and intentions

Actual residential mobility (measured as migration between regions), associated with job search, has been extensively studied in the theoretical literature. The determinants of workers' mobility can be identified in a basic human capital model (Ehrenberg and Smith, 1991). In this model, voluntary mobility is considered an investment. The decision to move is therefore taken by measuring the present value

of net benefits of the move. The individual will choose to move if the present value of the benefits exceeds the monetary and psychic costs of moving. Human capital theory suggests that the young are more mobile. They have a greater number of years from which to benefit after a move and are liable to have lower psychic costs. The more educated are more mobile as they face less risk of subsequent unemployment (in the destination area) and they face more national labour markets, hence lower search costs for greater distances. Unemployment benefits have also been identified as influencing mobility decisions. There are various ways in which benefits can affect mobility. A move may be associated with the loss of benefits, in which case the costs of moving are greater (for example, housing benefits are administered by the local authority, or people need to register at a new job centre). Benefits may also be used to search for a job for a longer period of time; this may reduce mobility as individuals will have more time to look for a local job, but it may also induce mobility as individuals have more money to finance a move.

Hey and McKenna (1979) study the case where it is costly to change jobs (or take up a job) but costless to search for them. In their model accepting a job means moving. Their model suggests that higher-paid workers need less relative inducements to move than lower-paid workers. Because after changing they have a higher probability of getting another wage offer that would have been preferred before changing, the lower-paid workers must have a higher relative reservation wage. They also find that a worker becomes choosier as the cost of moving and the probability of getting a job offer increase.

At the level of the household, theoretical models of the influence of family on individual decisions have been developed in particular by Becker (1993). They show that individual decisions which affect households' income and utility are influenced by the situation of the other members of the family. Once an individual is a member

of a family, his or her decisions cannot be studied separately from his or her family situation. Mincer (1978) studies households' migration decisions; he finds that households with several persons are less likely to move than single persons and that unemployment tends to be positively related to migration. Moreover, two-earner households are less likely to migrate than single-earner families. Theories on households' behaviour suggest that an econometric model of mobility should include family characteristics.

Migration behaviour, in particular the determinants of actual migration, has been a topic of interest for empirical economists for many years (see the literature survey of Greenwood, 1975). However, most of the empirical evidence concerns the United States. Recent empirical literature has tested the hypothesis that relative earnings and relative employment prospects are strong determinants of mobility. Cameron and Muellbauer (1998) found such effects for the UK, and McCormick (1997) found evidence that non-manual labour flows to the region with the lowest unemployment rate, while manuals tend to be immobile. Cameron and Muellbauer (1998) also found strong evidence of the influence of the housing market, especially for contiguous region migration. Their results show that high relative house prices discourage net migration to a region. Expected house price rises, by reducing the user cost of housing, can however provide a temporary offset. Herzog et al. (1993) provide a review of the main empirical findings concerning migration considered as spatial job-search. Even though in this chapter we study expressed willingness to move and not actual mobility, this type of interpretation is very relevant to our study because we consider the decision of moving within job search. Herzog et al. report that there seems to be a consensus for the positive effect of unemployment on migration, although this effect varies with the individuals' characteristics (race, gender, occupation, prior geographic mobility and nativity). They also find that this effect

diminishes with unemployment duration and increases with mean distance of potential moves, union membership and severity of cyclical downturns within one's local labour market. For the UK, contrary to the United States, they report that local rates of unemployment do not affect individuals' migration.

Böheim and Taylor (1999), using the British Household Panel Survey (BHPS), find that a desire to move house because of work-related reasons has the largest impact on the probability of moving between regions. Gardner et al. (2000) use the BHPS and the National Child Development Study (NCDS) to study the determinants of moves for job reasons. They find evidence that, ceteris paribus, private renters are more mobile than other types of tenants and than homeowners. They also identify significant partner's effects. Men tend to be more mobile when their partner is not employed, while women tend to be more mobile when they are single. Further evidence shows that women tend to follow their partners when these need to move for job-related reasons.

A few articles have been interested in the determinants of mobility intentions. Oswald (1997) finds cross-tabulation evidence that private renters are more likely to say they are willing to move to find an acceptable job. This is true of both unemployed people, and employed people faced with the hypothetical situation of becoming unemployed. Hughes and McCormick (1985) study actual and intended[1] migration and movement for households with employed, self-employed and unemployed heads. Their explanatory variables include housing tenure, educational attainment, age, occupation, sector of employment, length of residence, and region of residence. When they include a dummy for an unemployed head of household, they

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[1] The analysis of movement/migration intentions uses answers given to a stream of questions in a section of the interview initiated by an enquiry as to whether "any member of the household is seriously thinking of moving from their present address". For one year, they also identify potential movers who also intend to migrate.

find that these households are more likely to intend to migrate because of a general increase in the propensity to move (not because of an increase in the propensity to migrate conditional on movement).[2] They also attempt to interact this unemployment dummy with various personal characteristics and they find that this effect of unemployment on migration is restricted to non-manuals. In terms of moving intentions, they find no difference between unemployed manuals and non-manuals. They also find that potential migration and movement both increase with the length of unemployment. Hughes and McCormick have weak evidence that unemployed people are more likely to consider migration if they are in a high unemployment rate region, especially if they were already considering moving. Finally, they find that length of unemployment matters only for potential movement; households whose heads have been unemployed for less than three months are less likely to intend to move than those whose heads have been unemployed for at least three months.

Faini et al. (1997) study mobility in Italy. They use data from the Italian Labour Force Survey. They use a multinomial logit to model the willingness of respondents to take a job in one of these locations: only in their own town, in a neighbouring town, or anywhere. Their specification contains the following explanatory variables: gender, educational qualification, age, regional dummies, the percentage of household members who are either employed or receiving a State pension. The latter variable is expected to capture the impact of household support and government transfers. The authors find that males and more educated people are more likely to be willing to take a job anywhere compared to moving to a neighbouring town or staying in their town. They are also more likely to take a job in a neighbouring town compared to staying in their hometown. Consistently with theory, younger people are more likely to be willing to move compared to staying in

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[2] The author distinguishes between changing region (migration) and changing house (movement).

their own town. Contrary to the idea that household income is used to finance unemployment, Faini et al. find that a higher percentage of employed or retired members of the households is associated with higher willingness to move. Finally, after regressing the estimated regional fixed effects on regional unemployment, they conclude that the latter is associated with higher long-distance mobility but discourages short-distance migration. This is consistent with theory.

Ahn et al. (1999) study the determinants of the willingness to move for work. The variable is obtained from answers to the question: would you accept a job offer which required a change of residence? This question was asked of unemployed people only.[3] Consistently with what would be expected, they find that willingness to move increases significantly with education level and decreases for teenagers and the over 50s. In addition, they find that unmarried sons are twice as willing to move as heads of households. Married women with working husbands are less willing to move than female heads or unmarried daughters. Unemployment benefits and the regional unemployment rate do not appear to affect willingness to move. Willingness to migrate is not found to change with unemployment duration. Reaching the end of unemployment benefits represents one of the main reasons for changing attitude towards mobility. Higher house prices in the region of residence appear to decrease willingness to move. Ahn et al. also estimate an ordered probit model of duration of unemployment. They use a bivariate probit model to control for endogeneity of migration attitude. To identify their model, they include moving costs (proxied by regional average house prices and real wages) and household situation variables (such as the presence of children and the number of workers and unemployed in the household). They find that male unemployed workers with a positive attitude towards mobility find jobs more quickly than other males.

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[3] This is very similar to the data we use.

In addition to the willingness to move for work, we argue that job search and therefore the flexibility of unemployed people also depend on the type of job individuals are willing to accept.

3.2.2 Pay and skill content decisions

The skill content of a job often determines the level of pay. The decisions concerning what level of pay and of skill are acceptable are therefore strongly related. The literature on the reservation wage can provide useful evidence on the determinants of the wage expectation of unemployed people. We therefore review findings relevant to our study. Expectations regarding skills are considered to represent the choosiness of unemployed people regarding the quality of their future job. They are likely to be determined by similar factors to those which influence the reservation wage.

The economic (financial) and psychological costs of unemployment are expected to influence the level of the reservation wage (Jones, 1989a). Jones estimates ordinary least squares and two-stage least squares models of the dependence of reservation wages on the costs of unemployment and other controls. He finds a strong negative coefficient for the variable measuring the psychological costs of unemployment.[4] The influence of these costs is likely to depend on the household situation of individuals. For example, the income of other members may enable a longer job search and therefore a higher reservation wage and a lower willingness to accept lower skill content, as the individuals have more time to look for a good match.

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[4] Unemployment's psychological costs are measured by the answers to the question: "How likely is it you would accept a job if it involved each of these things: a different type of work, a longer journey to work, a job that involved moving house to another area, a job with longer hours, a job at a lower level of skill or qualifications?".

Past unemployment experience can also be thought of as influencing the expectations of unemployed peopled. This idea is associated with the empirical finding that unemployment may be "scarring" and affect future employment prospects (Arulampalam et al., 2000). People who often experience unemployment may be more likely to decrease their wage expectation and accept low quality, therefore precarious, jobs. Expectations concerning the level of pay and the quality of the job are also likely to be influenced by the reason why the individual became unemployed. Jones (1989a) finds that unemployment benefits are significantly and positively related to reservation wages for job-leavers, while they have an insignificant and negative sign for job-losers. The psychological costs have negative effects on the reservation wages of both groups, but are statistically significant only for job-losers. People who chose to leave their job probably did so because they were not satisfied with their previous employment and they are not likely to be willing to accept a worse job.

3.3 Data and econometric model

3.3.1 The data set

We use the British National Child Development Study (NCDS). This data set is based on a sample of children born in Great Britain between 3 and 9 March 1958. Five surveys have been undertaken at ages 7, 11, 16, 23 and 33. We use data on people unemployed at the interview of the fourth sweep (age 23). The estimations use data on 1160 individuals who reported that they were unemployed and wanting work in 1981. We are interested in studying the determinants of the choices that these individuals make. In particular, we consider here that the decisions concerning the wage offered, the level of skill required and the location of the job are the main choice variables during job search. We look at ex ante flexibility of young unemployed

people. We define flexibility as the willingness to make trade-offs in order to get a job. We should note that, from the previous literature review, young people are expected to be one of the most flexible groups of people.

3.3.2 Job search flexibility and its determinants

Flexibility of the unemployed is represented by three conscious or unconscious decisions that they face when looking for a job. These are whether "they have considered applying for a job which would mean moving house",[5] whether "they have considered applying for a job with less take home pay than their last job" and whether "they have considered applying for a job which involved a lower level of skill or qualification than their last job". We do not study the determinants of actual moves or job acceptances. This is due to the limitation of the data; although we know whether people who have been unemployed have made one of these decisions, we do not know when they were unemployed, and therefore we do not have precise information on their situation at the time of their spell of unemployment. We do, however, use the information which is available in a simple cross-tabulation analysis (see table 3.2 and section 3.4.2).

We focus on intentions because they can inform policy decisions. While actual events (such as a move) are dependent on controllable factors (such as the ones we include in our specifications), they are also a product of luck, random opportunities, etc. On the contrary, intentions are the outcomes of individuals analysing their current situation and maximising their utility (optimising their job search) given their characteristics and opportunities. This is particularly true here given the way the questions are asked; people are expected to have thought about the question and to

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[5] We should note here that there does not need to be migration to another region. The decision concerns the move to another house.

behave accordingly with their decision. For example, if they have decided not to consider jobs which involve moving house, they effectively restrict their search to local jobs. This matters for policy because analyses of the probability that events occur may ignore or underestimate the importance of certain factors which may be relevant in explaining mobility and flexibility.

We should note that, because of the nature of the data, we do not consider the labour demand side. We therefore do not take into account the behaviour of employers in looking for workers. We do, however, control for the external environment (in particular, unemployment in the area).

It is interesting to note that our approach is different from that of Jones (1989a). We consider that accepting a lower wage than before (i.e. a reservation wage ratio below one in Jones terminology) and accepting a move or a job-skill reduction are simultaneous decisions. Jones, on the other hand, considers that willingness to move and to accept a job with lower skill content are determinants of the reservation wage.

We suggest that these decisions are taken simultaneously and are probably inter-related. As simple intuition and cross-section analysis (Jones, 1989b) show, they are directly related to job search intensity and therefore to the duration of unemployment spells.[6]

Economic theory and previous empirical findings give us an indication of which factors may influence such flexibility. We aim to determine which are the most relevant and the relative size of their effects. They can be divided in three groups: family structure and characteristics, personal characteristics, and environment. All these have been found to affect job search. To characterise family structure, we have a

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[6] For data reasons, we are not interested here in determining the extent to which it is true that the decisions influence the duration of unemployment. We assume that this is the case.

dummy for partnership status. We also interact this dummy with gender because partnership status is expected not to have the same influence on men's and women's decisions. We include a variable indicating whether the individual has living children or has to take care of children. We also include the type of housing tenure. We control for regional factors through region dummies and we include at a lower level of spatial disaggregation the Local Authority unemployment and sickness rate. We take into account family income: we include measures of partner's wage, cohort member wage in previous job and whether any unemployment benefits are received in the family. The personal characteristics, which are used to control for individual effects, are the following: leaving school age, whether they contact employment services such as job centres, whether they voluntarily left their previous job (if they had one), the number of times they were unemployed[7], whether they are looking for a full-time job, scores of tests taken at 7 years old, and gender. Finally, we include local unemployment as an indication of the state of the labour market in the Local Authority where they live.

From the discussion in section 3.2, one could argue that an important variable is missing from our specification, namely the duration of unemployment. It is possible that the various decisions are influenced by the length of the current spell of unemployment. Looking at the last rows of table 3.1, we see that as the duration of unemployment increases, individuals are found to be less likely to have considered moving, while their willingness to accept lower pay and skill content initially increases then decreases. The direction of causality is not identified in such a simple analysis. After estimating specifications including unemployment duration and

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[7] One might argue that this variable might be endogenous as willingness to move may be considered to be a determinant of unemployment. However, we argue here that the decisions on mobility, pay and skills are not constant over time and are taken with respect to the current situation. We conclude that they do not affect past spells of unemployment. We also checked that excluding the unemployment variable did not alter the results.

finding it statistically insignificant, we decided to exclude it. It appears that the number of previous spells of unemployment is sufficient to capture the unemployment effect.

3.3.3 Econometric models

We first estimate separate probit equations of each of the three decisions, i.e. assuming that they are independent.

We use a probit model of the form:

$$\Pr(y_i = 1) = G(x_i'\beta) \qquad (1)$$

where y is equal to one if the answer is positive and zero otherwise, x is the vector of explanatory variables and G is the unit Normal cumulative distribution function:

$$G(z) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{z} \exp(-u^2/2)du \qquad (2)$$

Assuming a random sample, we maximise the following likelihood function:

$$L = \prod_{i=1}^{n} G(x_i'\beta)^{y_i} [1 - G(x_i'\beta)]^{1-y_i} \qquad (3)$$

We interpret the results by looking at the marginal effects. For continuous variables, these are calculated as the derivative of the predicted probability with respect to the variable of interest, keeping all the other variables at their means:

$$\frac{\partial G}{\partial x_i} = g(\bar{x}\beta)\beta_i \qquad (4)$$

with $g(.)$ the normal density function. For dummy variables, the marginal effect is the discrete change in predicted probability when the dummy changes from 0 to 1, keeping all other variables at their means.

In addition we carry out several diagnostic tests to check for model misspecification (homoscedasticity, normality, and functional form). The tests are computed using moment residuals following Chesher and Irish (1987). They are reported in the last rows of each table.

In order to take into account the fact that the three decisions are made simultaneously we use a multivariate probit model of the following form:

$$y_{im}^{*} = \beta_m' x_{im} + \varepsilon_{im}, \quad m = 1,\ 2,\ 3. \qquad (5)$$

where the latent variables y^* indicate the flexibility of unemployed people when looking for a job. These are not observable and only the variables y (defined as in the probit) are observed:

$$y_{im} = 1 \quad if \quad y_{im}^{*} > 0, \quad and \ \ 0 \ otherwise. \qquad (6)$$

ε_{im} are distributed as multivariate normal with mean vector 0 and covariance matrix R with diagonal elements equal to 1. Each individual equation is a standard probit model. In our case, this type of model involves the estimation of a trivariate normal integral, which is difficult to estimate directly. Recent literature suggests that a successful methodology to approximate multivariate normal cumulative distribution functions is the GHK simulator (Geweke, Hajivassiliou, and Keane).[8]

3.4 Analysis of search behaviour

3.4.1 Sample analysis

Table B.3.1 in appendix B shows summary statistics for our variables both in the whole data set and in our estimation sample (the latter includes those unemployed in 1981 and who had a job before). Comparing the means of our sample with the means of the whole data set can give us some interesting insights. We see that

compared to the data set means, a lower proportion of our sample left school after 18. They also have lower average scores in maths and reading tests. They seem to have had a higher number of unemployment spells beforehand. They are much less likely to be professionals and more likely to be manuals. The individuals are less likely to have a partner, but only slightly less likely to have children. They are slightly less likely to be private renters or owners, but more likely to be sharing with relatives. Finally, they are much less likely to live in Greater London. This descriptive analysis shows that people who were unemployed at the time of the interview in 1981 seem to be in a worse economic and social situation than the average person.

3.4.2 Cross-tabulations

Before turning to more elaborate econometric techniques, it is interesting to look at the raw patterns in the data. Using the full sample of 1160 unemployed people, we observe that 37 percent would consider applying for jobs which involve moving house. If we restrict the sample to those who previously had a job, the proportion slightly falls to 35 percent. The latter is much smaller than the proportion of people who would accept a job with less pay or lower qualifications (51 percent and 57 percent respectively). If we check the actual behaviour of these people (by looking at whether they moved for job reasons in the next year and a half after the interview), we see that among those expressing willingness to move while unemployed, 9.3 percent actually moved, while 4.2 percent of those unwilling to do so did move. Two main observations can be made. First, only a small proportion of those who expressed a willingness to move actually did so. Second, the difference in the two mentioned

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[8] We used the multivariate probit routine built in Limdep 7 (Greene, 1998). Details on the GHK methodology can be found in chapter 5 of Greene (1997).

proportions is statistically significant and is consistent with the idea that willingness to move is a good predictor of future moves.[9]

Table 3.1 shows the proportions of people willing to move (column 1), to accept lower pay (column 2), and to accept a job requiring lower skills (column 3) according to various characteristics. We can see that compared to those with no qualification, those who have a degree will be more likely to be willing to move or to accept lower wage but less likely to accept a less demanding job. Those who have a partner are less willing to move and to accept lower pay compared to single people, but they are more likely to accept lower skill. If we consider men and women separately (results not shown), we find the same result. People who have contacts with job centres seem to be more flexible than those who do not. Finally, men seem to be more flexible than women, especially about moving house.

Table 3.2 shows cross-tabulations for people who were employed in 1981 but had been unemployed and looking for work in the past. In general, as would be expected, the proportions of those who had to accept one of the outcomes are lower than those willing to make these decisions. The first row indicates that among the three decisions, accepting a job with lower pay is the most likely to be made. An interesting result shows that, although we found a large gender difference in the willingness to move, it is much reduced and is in the opposite direction for actual moves. Those with a degree remain much more likely to move than those without qualification. Consistently with expectations, they are also less likely to have accepted a job with lower pay or a lower skill content. In both tables we can see that individuals with different characteristics vary mostly in their attitude to moving house.

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[9] We should note that because only moves for own job *or partner's* job reason were recorded, we do not have a perfect measure of the individual's actual move.

3.4.3 Separate probits as if decisions were independent of each other

Table 3.3 shows the results of the estimations of separate probit models for each of our dependent variables.[10] We can see from the pseudo R-squared that we are better able to explain decisions on mobility and pay compared to decisions on skills.

Column 1 shows the results concerning the determinants of the decision on mobility. A higher number of spells of unemployment in addition to the current spell is associated with a higher probability of accepting to move; an extra spell increases the probability of being willing to move by 4.5 percentage points. This result is consistent with the consensus reached in the literature (Herzog et al. 1993). Women who have a partner are less likely to be willing to move compared to those who are single. For men, we see that they are more likely to be willing to move when they have a partner who does not work. They are only slightly less likely to want to move if their partner works. This is interesting because it shows how job search is affected by being in a partnership. Even controlling for the partner's wage, men tend to lead the way, and women tend to restrict their search to jobs which do not entail moving. These results are consistent with men being the main breadwinners; they are also consistent with the gender differences identified in the theoretical model of Mincer (1978) and the empirical findings of Gardner et al. (2000). We find that council tenants are less willing to move than owners while private tenants and people sharing with relatives are more willing (although these effects are not statistically significant). This is consistent with findings that private tenants tend to be more willing to move (as in Oswald, 1997).

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[10] We also have additional results for the decision on mobility in table C.3.1 (appendix C) where we include those who never had a job before their unemployment spell.

People who left school after the age of 18 are more likely to be willing to move, so are those who voluntarily left their previous job (as opposed to being sacked, made redundant, etc.). The former education effect is consistent with previous empirical findings on actual mobility (see for example Faini et al., 1997) and with basic theoretical models (Ehrenberg and Smith, 1991). The presence of children decreases mobility willingness, but this result is statistically significant only at around 20 percent. Over the range of possible wages, the wage in the previous job has a flat inverse U-shaped association with the willingness to move. As their previous wage increases, individuals are more and more willing to move. At higher wages (above £127 a week 1981 prices), they become less and less willing. Partner's wage and unemployment benefits are not statistically significant.

We do not find the distinction usually made in current empirical evidence between (mobile) non-manuals and (immobile) manuals (McCormick, 1997). On the contrary, we find that skilled manuals are apparently more likely to be willing to move than non-manuals. This result may show that manuals are less able to go through with their move although they seem more willing to do so. This would also be consistent with the findings of tables 3.1 and 3.2.

Individuals who live in Yorkshire & Humberside and the North-West are statistically significantly more likely to be willing to move for work compared to those who live in the South-East. This may be due to the lack of opportunities in the former regions, and also the lack of suitable public transport. Individuals in the South-East are likely to be able to find a job to which they can commute, so they may be a priori less willing to move. Moreover, the South-East is known for its tight housing market. Consistently with the literature (Herzog et al., 1993), we find that local labour market tightness (measured by unemployment and sickness rate in Local Authorities) does not have a statistically significant effect on mobility.

From table C.3.1, we see that the results are unchanged when we include people who never had a job before. The latter are more likely to be willing to move by 46.6 percentage points.[11] This is a large effect, especially considering that the observed probability of moving is 56 percent. They may be more desperate to find a job. We can also think that, as there might be unobservable individual effects influencing the time at which people join the labour market, people who tend to have a first job later in their life also tend to be more mobile.

Column 2 of table 3.3 shows results concerning acceptance of a lower wage. We find that past unemployment spells do not have a statistically significant effect on the willingness to accept lower pay. This is contrary to the idea that people who often experience unemployment adjust their expectations downwards, although the direction of the effect is as was expected. Wage in the previous job has an inverse-U shaped relation with willingness to accept a lower wage. For higher previous wages, the willingness to accept lower pay in a future job increases at a decreasing rate. At wages above £162 per week, people become less and less likely to be willing to accept lower pay. When they become unemployed, individuals may adjust their pay expectations and decrease their reservation wage, while high wage earners may have enough resources to afford to be more choosy. A higher local unemployment rate is associated with a lower willingness to accept a lower wage. This may be because the wage of the previous job may have been already quite low (in an area of high unemployment). At higher rates, wage expectations appear to be revised downwards, although the effect is not statistically significant. Those whose wage was covered by Trade Union negotiations are significantly more likely to accept a lower pay (by 13

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[11] This group represents 6 percent (40 observations) of the sample; it is similar in size to the professionals and intermediate occupations group.

percentage points). This is consistent with them realising the existence of a Union wage premium.

People who stayed longer at school and those who voluntarily left their previous job are less willing to accept a lower wage, but only the latter effect is statistically significant. Women are more likely to accept a pay cut when they have a partner, so are men when their partner works but not when their partner does not work. Men whose partner does not work may potentially be the only breadwinner in the household and wish to have a relatively high income because of that. Although these effects are not statistically significant, they seem to be consistent with women relying more on their partner's wage.[12] Partner's wage forms a flat inverse U-shaped relationship with willingness to accept a lower wage. However, this effect is not statistically significant. Only people living in the North are statistically significantly different from those in other regions: they are more likely to be willing to accept a lower wage. We do not find a statistically significant effect for children, and the coefficient itself is close to zero.

Column 3 shows the results for the last variable of interest here, the willingness to accept a job which requires lower skills or qualifications. Higher previous wage is associated with higher willingness to accept a lower skill content (the squared term is not statistically significant). If we count the effect of the squared term, we observe a decrease in the willingness to accept a job with a lower skill content at wages higher than £135 per week. As for the previous dependent variable, we do not find that people who have been unemployed in the past adjust their expectations on the quality of their future jobs downwards. Here, the coefficient on

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[12] As could be expected, the average wage of women's partners is significantly higher than the average wage of men's partners (£94 and £54 per week respectively).

unemployment spells is very close to zero and has a negative sign (i.e. different from what was expected).

As would be expected, individuals who stay on at school and who left their previous job are less likely to be willing to accept lower skill content. Having invested more in their human capital, they have a higher (financial and psychological) opportunity cost of considering applying for lower quality jobs. For both men and women, having a partner (who works or not) increases the likelihood of applying for a job with lower skill content. This may show that individuals who are in partnerships are more pressed to find a job. If the partner works, it may be a psychological pressure to find a job even if it does not pay a lot. If the partner does not work, they may be financially forced to find any job so that the family gets some income. Partner's wage has a U-shaped relationship with the willingness to accept lower skill content; this is inconsistent with them relying on their partner's income while unemployed. Unemployment benefits do not have a statistically significant effect, but its direction is consistent with expectations; at low levels of benefits, the relationship is quite flat, then higher benefits decrease the willingness to accept lower skills at an increasing rate.

It is important to take into account the likelihood that unobserved factors linked to these decisions may be related. We do this in the following section.

3.4.4 Multivariate probit taking into account the fact that the error terms might be correlated across equations

We consider that these three decisions are jointly determined. Mobility is considered in terms of a spatial job-search framework, as in Herzog et al. (1993), but search is also determined by decisions on pay and skill content. Tables 3.4 and 3.5 show results for a more parsimonious specification, namely we drop variables which

are not of interest and which have t-ratios below 1.2. Table 3.4 shows results for the multivariate probit model and table 3.5 shows the separate probits estimated with the same sample and specification as the multivariate model.

Comparing tables 3.3 and 3.5, we find that the results are essentially unchanged in the parsimonious specification. Most coefficients keep their sign and size; the few which do not were not statistically significant and stay insignificant. The main differences are the following: contact with employment services becomes statistically significant for all three decisions, and partner's work becomes statistically significant for decisions concerning pay and skill content.

The first interesting result shown in the last rows of table 3.4 is that the coefficients of correlation between our dependent variables are statistically significant. This justifies the use of such a specification. The new estimates will be more efficient (Davidson and MacKinnon, 1993). All the coefficients of correlation are positive, which means that unemployed people adapt their job search: they are overall more flexible, i.e. faced with an exogenous event, they do not make trade-offs such as accepting a lower wage in order to be able to stay in the area. Pay and skills are strongly related to each other. This can be explained as wage and skills are generally linked to each other anyway; lower skilled jobs will pay less. These two decisions seem correlated to the same degree with the decision to move. In a way, this result is consistent with Jones' (1989a) findings that the willingness to move and the willingness to accept lower skills are good determinants of the reservation wage. We prefer our specification to his, however, as we consider that these decisions are simultaneously determined and that a causal effect is therefore impossible to identify.

We now compare corresponding columns of table 3.4 (showing the multivariate probit model) and table 3.5 (showing the separate probit models). From the first column of each table, we see that most of the statistically significant

coefficients are unchanged. Several coefficients (own wage squared, female partner does not work, and living in West Midlands) become statistically insignificant. From the second column, being skilled manual becomes statistically significant and larger. The partner effect becomes insignificant, so do living in the North and the Local Authority unemployment and sickness rate (although the latter is statistically significant at 10.5 percent). Finally in the third column, we find that the partner's work and wage effects lose statistical significance.

The main results can be summarised as follows. We find evidence that people who have had several experiences of unemployment by the age of 23 are more willing to move by around 3 percentage points, but do not adjust their expectations concerning pay and skills. This is surprising, as we would expect them to become more flexible to be able to find a job. One may think that these young people are jumping from one job to the next in the view to find a better job each time. In this case, unemployment does not appear to be scarring but to be a way of improving the match between the worker and the job.

Skilled manuals are found to be constrained in moving; although they are likely to consider jobs which imply moving (with a probability higher by 13 percentage points compared to non-manuals), they are unlikely to actually move for job reasons. This shows that there are some impediments to their move which are external to their wishes (and for which we do not control). One possible impediment may be the lack of information about potential jobs in other places.

The wage earned in the job preceding the unemployment spell has a similar effect on all decisions. At low pay levels, any increase in the wage is associated with a higher willingness to consider applying for a job which implies moving, a lower wage or a lower skill content. At higher wages, individuals become less and less willing. It appears that people are flexible around the average wage, but that people with high

wages (i.e. above £130-£160) are less flexible. This is consistent with the idea that high wage earners are likely to be more choosy (higher wages could be associated with higher psychic costs).

There is an asymmetry between men and women concerning the partner effect on the moving decision. This is consistent with previous findings on gender differences. The partner effects on pay and skill content decisions become imprecise when we account for the fact that the job search decisions are simultaneously determined and interdependent. In terms of size, the partner variables have the largest marginal effects that we record.

Consistently with theory and previous findings, we find that people with certain characteristics make trade-offs between decisions. More educated people tend to be more willing to move but less willing to accept a lower skill content, while those who left their previous job voluntarily are more willing to move but less willing to accept a job with lower pay or lower skill content. Skilled manuals are more willing to move but less willing to accept lower pay. For these people, moving seems to be the least costly decision of the three.

Those who have contacts with employment services are found to be more flexible. This may be because this variable catches other unobserved characteristics which tend to make them more flexible, or because employment services give incentives to them (or no choice but) to become more flexible.

Other results show that those who look for a full-time job are less flexible. We find signs consistent with a union pay premium, evidenced by the willingness of people whose wage was covered by a Union agreement to consider applying for a job with lower pay. Unemployment benefits influence job search mainly through their effect on expectations relative to the skill content of a job. At low levels, benefits have essentially no effect, then they tend to reduce the willingness to accept a job

which requires lower skills. As expected, children appear to make the decision of moving more costly. These costs are mostly psychological: parents may be worried about disrupting their children's lives too much, or may be unwilling to have them change school (Green, 1997). Finally, we find evidence of a North-South divide, with people living in the North/North West being more likely to move than those in the South-East. The effect of local conditions on the pay decision are weaker in the multivariate probit model.

3.5 Conclusion

This chapter has modelled job search as the product of three decisions. As was expected, decisions made concerning moving, wage and skills content are strongly positively dependent and simultaneously determined. When they are faced with an exogenous event, unemployed people are found not to make trade-offs between decisions on being mobile and decisions on pay or skills content of future jobs; they seem to adapt their overall expectations to the new situation. Decisions on pay and skills are more strongly related to each other than to the decision on moving.

We have provided an analysis of the behaviour of young unemployed people. Overall, we find that young people are quite flexible: there is a probability of 38 percent that they have considered applying for jobs which would involve moving, and probabilities of 56 and 58 percent that they have considered a job with lower pay or lower skill content respectively. The effect of unemployment benefits goes mainly through the decision on skill content; higher unemployment benefits decrease the willingness to accept a job with a lower skill content. People who use employment services are apparently more flexible. The results are consistent with the following conclusions. First, unemployment does not appear to be scarring for young people, as those who experience more unemployment are not found to alter their expectations

concerning wages and skill contents. Having experienced unemployment however gives them an incentive to be more mobile. Second, skilled manuals appear to be constrained in moving. Third, unemployed people appear to recognise the existence of a union wage premium.

The results also show that the partner effect on the pay and skill decisions becomes imprecise and weaker when we take into account the inter-dependence of the decisions. The effects of the Local Authority unemployment and sick rate, and of living in the North, on the pay decision were statistically and economically overestimated in the separate probit models. The statistical significance of the partner effect was also slightly overestimated in the decisions about moving but the size of the effect was not. Specifications which do not take into account the simultaneity between the decisions taken during job search may tend to overestimate partner's and local conditions direct effects. These results show that considering only one of the many decisions taken during job search may lead to inexact findings concerning the determinants of job search.

We have found that belonging to a household has an influence on the flexibility of the unemployed and that this effect is not the same for men and women. This suggests that further research related to household decisions would be useful in order to understand the behaviour of the unemployed but probably also of workers in general. In particular, it would be interesting to model joint household decisions.

One policy implication of this chapter concerns skilled manual workers; our results suggest that these individuals are willing to move more than others, even controlling for housing, income considerations and external conditions (region dummies). Some labour market policies could be devoted to analyse, probably at the local level, what are the impediments to moving. A likely explanation can be the lack of information concerning non-local jobs; this could be alleviated through a better

diffusion of information on vacancies via employment services (as we find evidence that the latter have some impact on job search).

Table 3.1: Proportion of people who are willing to accept various outcomes [according to their characteristics (%)]

	Moving	Lower wage	Lower skill content
All	37.7	52.6	58.7
Male	46.7	52.4	60.6
Female	22.3	52.9	55.5
Has a degree	77.3	46.1	48.4
Has no qualification	26.9	42.5	55.9
Left school before 16	32.5	53.0	60.9
Left school after 18	67.9	48.1	44.4
Has a partner	24.1	49.3	61.2
Is single	48.0	55.4	56.7
Has contacts with employment services	39.5	54.3	61.0
Has no contact with employment services	27.8	43.3	46.0
First job was manual	38.6	52.9	60.3
First job was non-manual	29.3	52.2	55.5
Current spell length (0-6 months)	41.2	51.5	52.5
Current spell length (7-12 months)	35.3	62.2	69.0
Current spell length (13+ months)	33.6	46.9	61.7

Note: the first column's proportions are based on 1155 persons who were unemployed and wanting work in 1981. The second and third columns are based on the 1092 persons from the latter sample who had a job before becoming unemployed. The proportions should be interpreted as follows: 77.3 percent of those holding a degree were willing to move for a job.

Table 3.2: Proportion of people who have accepted various outcomes when they found a job after last being unemployed [according to their characteristics (%)]

	Has moved	Has accepted a pay cut	Has accepted a job with lower skill content
All	14.1	40.9	26.1
Male	12.9	40.8	24.6
Female	16.1	41.0	28.7
Has a degree	30.4	29.2	19.7
Has no qualification	4.5	43.4	27.1
Left school before 16	7.4	43.3	26.5
Left school after 18	29.1	32.7	27.0
Has a partner	6.7	42.9	32.5
Is single	18.6	39.4	21.7
First job was manual	9.8	39.2	25.6
First job was non-manual	18.7	42.1	26.9

Note: the first column's proportions are based on a sample of 835 persons who were employed in 1981 but had had an unemployment spell in the past at the end of which they found a job. The second and third columns are based on the 689 persons of the latter sample who had a job before the unemployment spell.

Table 3.3: Separate probit equations.

	Would move		Would accept lower pay		Would accept lower skill content	
	Coeff.	M.E	Coeff.	M.E	Coeff.	M.E
Personal characterictics and situation						
Left school at 17 or younger (base)						
Left school at 18 or older	0.778**	30.031	-0.222	-8.811	-0.431**	-17.031
	(0.188)		(0.181)		(0.181)	
Has post-school qualification					-0.018	-0.711
					(0.123)	
Number of unemployment spells	0.124**	4.523	0.043	1.692	-0.013	-0.526
	(0.039)		(0.039)		(0.038)	
Male	-0.073	-2.666	-0.189	-7.404	-0.053	-2.079
	(0.168)		(0.163)		(0.167)	
Left previous job involuntarily (base)						
Left previous job voluntarily	0.383**	14.155	-0.199*	-7.833	-0.265**	-10.384
	(0.126)		(0.120)		(0.116)	
Above average in math test (7)	0.003	0.106	-0.079	-3.123	0.091	3.520
	(0.121)		(0.120)		(0.117)	
Contact with employment services	0.278	9.604	0.243	9.658	0.244	9.617
	(0.183)		(0.163)		(0.161)	
Look for full-time job	0.111	4.002	-0.423**	-16.172	-0.298*	-11.366
	(0.173)		(0.166)		(0.162)	
First job social status						
Professional/intermediate	0.337	12.866	0.151	5.848	0.330	12.275
	(0.276)		(0.269)		(0.282)	
Non-manual (base)						
Skilled manual	0.372**	13.851	-0.221	-8.745	0.076	2.946
	(0.173)		(0.164)		(0.160)	
Other manual	0.042	1.541	0.039	1.537	0.098	3.797
	(0.168)		(0.153)		(0.150)	
Last job						
Own wage (£1/10)	0.137**	5.001	0.304**	11.982	0.118**	4.618
	(0.060)		(0.058)		(0.058)	
Own wage squared ((own wage in £)^2 divided by 10000)	-0.540*	-19.652	-0.936**	-36.851	-0.438	-17.095
	(0.283)		(0.275)		(0.293)	
Pay covered by union bargaining	-0.006	-0.231	0.339**	13.245	-0.001	-0.040
	(0.119)		(0.116)		(0.114)	
Family structure and income						
No partner (base)						
Partner works	-1.165	-35.398	1.106	38.818	1.321	43.896
	(0.868)		(0.741)		(0.734)	
Partner does not work	-0.711	-20.851	1.773	41.561	2.534**	42.810
	(.991)		(0.980)		(0.895)	
Female partner works	1.138**	42.989	-0.330	-13.104	0.087	3.344
	(0.434)		(0.399)		(0.382)	
Female partner does not work	2.233**	63.456	-1.666	-50.192	-1.302	-44.791
	(1.018)		(0.997)		(0.967)	
Has living children or care for children	-0.231	-8.173	-0.032	-1.275	-0.080	-3.113
	(0.176)		(0.166)		(0.163)	
Owners or buying (base)						
Council tenants	-0.036	-1.296	0.149	5.813	-0.275	-10.880
	(0.333)		(0.242)		(0.239)	
Private tenants	0.312	11.895	-0.334	-13.275	-0.586*	-23.012
	(0.344)		(0.329)		(0.305)	
Sharing with relatives	0.347	12.436	0.167	6.586	-0.372	-14.355
	(0.304)		(0.252)		(0.248)	

Table 3.3 (ctd.)

Other	0.335	12.763	0.094	3.678	-0.228	-9.023
	(0.311)		(0.259)		(0.257)	
Partner's wage (£ 1/10)	0.001	0.047	-0.206	-8.086	-0.299*	-11.642
	(0.154)		(0.133)		(0.134)	
Partner's wage squared (partner's wage in £)^2 divided by 10000	0.232	8.454	0.845	33.250	1.184**	46.150
	(0.663)		(0.558)		(0.570)	
Weekly unemployment benefits (£1/10)	-0.001	-0.037	0.081	3.182	0.052	2.032
	(0.110)		(0.102)		(0.101)	
Weekly unemployment benefits squared (weekly unemployment benefits in £)^2 divided by 1000	-0.242	-8.790	-0.224	-8.829	-0.419	-16.346
	(0.273)		(0.239)		(0.239)	
Local situation						
Proportion of unemployed and sick in LA	-0.084	-3.070	-0.169**	-6.648	-0.066	-2.570
	(0.083)		(0.078)		(0.078)	
Proportion of unemployed and sick in LA squared	0.006	0.205	0.008	0.321	0.002	0.081
	(0.005)		(0.005)		(0.005)	
South East (Base)						
Greater London	0.038	1.396	-0.039	-1.538	-0.232	-9.170
	(0.305)		(0.280)		(0.281)	
South West	0.317	12.087	0.308	11.680	-0.159	-6.278
	(0.309)		(0.278)		(0.276)	
West	0.283	10.732	0.021	0.828	0.078	3.005
	(0.315)		(0.297)		(0.290)	
West Midlands	0.369	14.021	0.162	6.287	-0.005	-0.190
	(0.253)		(0.227)		(0.225)	
East Midlands	0.653**	25.351	0.256	9.799	0.121	4.647
	(0.297)		(0.288)		(0.285)	
East Anglia	0.048	1.751	0.114	4.424	-0.170	-6.725
	(0.473)		(0.429)		(0.411)	
Yorkshire Humberside	0.566**	21.883	-0.001	-0.043	0.053	2.074
	(0.286)		(0.258)		(0.258)	
North West	0.655**	25.138	0.006	0.229	0.171	6.576
	(0.272)		(0.244)		(0.231)	
North	0.447	17.089	0.440*	16.489	0.290	10.960
	(0.300)		(0.265)		(0.253)	
Scotland	0.361	13.711	-0.301	-11.935	-0.086	-3.368
	(0.279)		(0.257)		(0.251)	
Constant	-1.969**		-0.599		0.574	
	(0.558)		(0.487)		(0.483)	
Observations	618		610		605	
Observed probability	0.379		0.559		0.578	
Pseudo R^2	0.206		0.133		0.064	
Heteroscedasticity	$\chi^2(38) = 51.459$		$\chi^2(38) = 52.400$		**$\chi^2(39) = 55.808$**	
Functional form	$\chi^2(1) = 3.243$		$\chi^2(1) = 0.023$		$\chi^2(1) = 0.106$	
Normality test	$\chi^2(2) = 3.982$		$\chi^2(2) = 0.083$		$\chi^2(2) = 0.158$	

Notes:
(1) Robust standard errors in brackets.
(2) The coefficients are statistically significant at ** 5 percent or * 10 percent.
(3) Tests (in the last three rows) that fail at 5 percent are in bold.
(4) M.E are marginal effects expressed in percentage points.

Table 3.4: Multivariate probit, parsimonious specification.

	Would move	Would accept lower pay	Would accept lower skill content
Personal characterictics and situation			
Left school at 17 or younger (base)			
Left school at 18 or older	0.802**	-0.185	-0.309*
	(0.189)	(0.174)	(0.168)
Number of unemployment spells	0.094**	0.028	0.0002
	(0.042)	(0.036)	(0.037)
Male	0.039	-0.191	-0.056
	(0.172)	(0.169)	(0.145)
Left previous job involuntarily (base)			
Left previous job voluntarily	0.327*	-0.280**	-0.251**
	(0.124)	(0.112)	(0.110)
Contact with employment services	0.300*	0.286*	0.344**
	(0.181)	(0.159)	(0.150)
Look for full-time job		-0.454**	-0.342**
		(0.150)	(0.147)
First job social status			
Professional/intermediate	0.255	-0.100	
	(0.291)	(0.248)	
Non-manual (base)			
Skilled manual	0.326*	-0.269*	
	(0.174)	(0.152)	
Other manual	0.164	-0.079	
	(0.164)	(0.138)	
Last job			
Own wage (£1/10)	0.134**	0.326**	0.147**
	(0.060)	(0.070)	(0.052)
Own wage squared ((own wage in £)^2 divided by 10000)	-0.492	-0.983**	-0.561**
	(0.325)	(0.412)	(0.264)
Pay covered by union bargaining		0.257**	
		(0.106)	
Family structure and income			
No partner (base)			
Partner works	-1.422	1.169	1.325
	(0.932)	(0.877)	(0.883)
Partner does not work	-1.045	2.074	2.570
	(1.272)	(5.450)	(6.171)
Female partner works	1.211**	-0.393	0.073
	(0.451)	(0.347)	(0.389)
Female partner does not work	1.828	-2.318	-2.015
	(1.251)	(5.493)	(6.168)
Has living children or care for children	-0.382**		
	(0.182)		
Owners or buying (base)			
Council tenants	0.095	-0.007	-0.265
	(0.309)	(0.231)	(0.225)

Table 3.4 (ctd.)

Private tenants	0.337	-0.214	-0.624**
	(0.343)	(0.287)	(0.281)
Sharing with relatives	0.321	0.116	-0.444*
	(0.288)	(0.250)	(0.257)
Other	0.488	-0.031	-0.363
	(0.329)	(0.261)	(0.272)
Partner's wage (£ 1/10)	0.055	-0.189	-0.299*
	(0.174)	(0.179)	(0.177)
Partner's wage squared (partner's wage in £)^2 divided by 10000	0.020	0.667	1.162
	(0.737)	(0.873)	(0.849)
Weekly unemployment benefits (£1/10)	-0.035	0.129	0.131
	(0.133)	(0.115)	(0.107)
Weekly unemployment benefits squared (weekly unemployment benefits in £)^2 divided by 1000	-0.125	-0.281	-0.483*
	(0.347)	(0.311)	(0.290)
Local situation			
Proportion of unemployed and sick in LA		-0.139	
		(0.085)	
Proportion of unemployed and sick in LA squared		0.006	
		(0.006)	
West Midlands	0.260		
	(0.185)		
East Midlands	0.301		
	(0.292)		
Yorkshire Humberside	0.142		
	(0.208)		
North West	0.438**		
	(0.177)		
North	0.151	0.269	
	(0.196)	(0.171)	
Scotland	0.100		
	(0.196)		
Constant	-1.919**	-0.669	0.123
	(0.448)	(0.477)	(0.365)
Observations	710		
Log likelihood function	-1206.401		
Correlation coefficient between columns (1) and (2)	0.272		
	(0.069)		
Correlation coefficient between columns (1) and (3)	0.239		
	(0.071)		
Correlation coefficient between columns (2) and (3)	0.565		
	(0.052)		

Note: Each correlation coefficient is statistically significantly different from zero, with p-value of zero correlation equal to zero.

Table 3.5: Separate probits, parsimonious specification.

	Would move		Would accept lower pay		Would accept lower skill content	
	Coeff.	M.E	Coeff.	M.E	Coeff.	M.E
Personal characterictics and situation						
Left school at 17 or younger (base)						
Left school at 18 or older	0.805**	31.040	-0.192	-7.610	-0.306*	-12.107
	(0.175)		(0.171)		(0.158)	
Number of unemployment spells	0.094**	3.400	0.034	1.327	-0.001	-0.032
	(0.033)		(0.035)		(0.033)	
Male	0.019	0.705	-0.221	-8.682	-0.065	-2.537
	(0.155)		(0.150)		(0.140)	
Left previous job involuntarily (base)						
Left previous job voluntarily	0.326**	12.012	-0.285**	-11.235	-0.252**	-9.869
	(0.117)		(0.108)		(0.103)	
Contact with employment services	0.299*	10.273	0.295**	11.713	0.342**	13.529
	(0.169)		(0.147)		(0.141)	
Look for full-time job			-0.433**	-16.544	-0.320**	-12.194
			(0.151)		(0.142)	
First job social status						
Professional/intermediate	0.319	12.133	0.032	1.264		
	(0.270)		(0.269)			
Non-manual (base)						
Skilled manual	0.363**	13.472	-0.209	-8.279		
	(0.157)		(0.147)			
Other manual	0.199	7.297	-0.033	-1.311		
	(0.155)		(0.136)			
Last job						
Own wage (£1/10)	0.128**	4.631	0.324**	12.752	0.146**	5.698
	(0.054)		(0.054)		(0.052)	
Own wage squared ((own wage in £)^2 divided by 10000)	-0.457*	-16.572	-0.955**	-37.650	-0.545**	-21.296
	(0.266)		(0.255)		(0.272)	
Pay covered by union bargaining			0.268**	10.513		
			(0.106)			
Family structure and income						
No partner (base)						
Partner works	-1.398*	-40.362	1.052	37.309	1.271*	42.610
	(0.782)		(0.654)		(0.656)	
Partner does not work	-0.967	-25.462	1.886**	42.847	2.440**	43.039
	(1.001)		(0.857)		(0.851)	
Female partner works	1.238**	46.190	-0.366	-14.539	0.044	1.726
	(0.398)		(0.358)		(0.331)	
Female partner does not work	1.800*	58.544	-2.066**	-53.956	-1.953**	-54.593
	(0.980)		(0.819)		(0.840)	
Has living children or care for children	-0.377**	-12.990				
	(0.164)					
Owners or buying (base)						
Council tenants	0.100	3.666	-0.017	-0.682	-0.228	-9.017
	(0.278)		(0.211)		(0.210)	
Private tenants	0.323	12.295	-0.245	-9.754	-0.579**	-22.739
	(0.313)		(0.293)		(0.277)	
Sharing with relatives	0.314	11.220	0.089	3.509	-0.418*	-16.076
	(0.274)		(0.229)		(0.225)	
Other	0.484	18.601	-0.047	-1.853	-0.325	-12.870
	(0.288)		(0.247)		(0.237)	
Partner's wage (£ 1/10)	0.044	1.586	-0.170	-6.705	-0.285**	-11.127
	(0.136)		(0.119)		(0.121)	

Table 3.5 (ctd.)

Partner's wage squared (wage in £)^2 divided by 10000	0.079	2.867	0.590	23.252	1.096**	42.833
	(0.593)		(0.512)		(0.522)	
Weekly unemployment benefits (£1/10)	-0.008	-0.302	0.130	5.111	0.126	4.928
	(0.100)		(0.096)		(0.092)	
Weekly unemployment benefits squared (weekly unemployment benefits in £)^2 divided by 1000	-0.186	-6.757	-0.280	-11.027	-0.482**	-18.822
	(0.244)		(0.231)		(0.222)	
Local situation						
Proportion of unemployed and sick in LA			-0.155**	-6.110		
			(0.068)			
Proportion of unemployed and sick in LA squared			0.006	0.252		
			(0.004)			
West Midlands	0.290*	10.914				
	(0.173)					
East Midlands	0.326	12.406				
	(0.218)					
Yorkshire Humberside	0.172	6.407				
	(0.200)					
North West	0.443**	16.813				
	(0.163)					
North	0.173	6.444	0.380**	14.405		
	(0.199)		(0.168)			
Scotland	0.049	1.803				
	(0.177)					
Constant	-1.932**		-0.635		0.094	
	(0.393)		(0.428)		(0.342)	
Observations	710		710		710	
Observed probability	0.377		0.555		0.576	
Pseudo R^2	0.193		0.132		0.052	
Heteroscedasticity	$\chi^2(29) = 39.640$		$\chi^2(27) = \mathbf{60.401}$		$\chi^2(20) = 21.994$	
Functional form	$\chi^2(1) = 1.437$		$\chi^2(1) = 0.315$		$\chi^2(1) = 0.810$	
Normality test	$\chi^2(2) = 2.147$		$\chi^2(2) = 0.324$		$\chi^2(2) = 0.813$	

See notes to table 3.3.

Appendix A: Variables' definitions

Chapter's description	Corresponding question in data set
Personal characterictics and situation	
Left school at 17 or younger (base) Left school at 18 or older	Age at which the respondent left school.
Number of unemployment spells	How many periods of unemployment have you had?
Left previous job involuntarily (base) Left previous job voluntarily	How did your last job come to an end? Voluntarily = left of own accord. Involuntarily = temporary job, firm closed down, were made redundant, were sacked.
Above average in math test (7) Above average in reading test (7)	Scores from reading and arithmetic tests held when the child is 7. Marks go from 0 to 10 for arithmetics and from 0 to 30 for reading.
Contact with employment services	During your period of unemployment have you had any contact with the Job Centre, Government Employment Office or Professional and Executive Recruitment?
Look for full-time job	Are you looking for full-time or part-time work?
First job social status	
Never worked	Has the respondent had any jobs since leaving school? If yes:
Non-manual (base), Professional/intermediate, Skilled manual, Other manual	Occupation status
Last job	
Own wage (£1/10) Own wage squared ((own wage in £)^2 divided by 10000)	What was your usual pay after any deductions for tax and NI, including overtime, bonus, commission or tips etc. that you usually received?
Pay covered by union bargaining	Are your wage, salary or conditions of service negotiated by a Trade Union or a Staff Association?
Family structure and income	
No partner (base), Partner works, Partner does not work	Do you live with somebody as a couple? Is your partner in paid employment at present?
Female partner works Female partner does not work	Interaction between partner variable and gender variable.
Has living children or care for children	Does the respondent have any living children? Or are there any adoptive/spouse's/partner's/foster children in the respondent's care?
Owners or buying (base), Council tenants, Private tenants, Sharing with relatives, Other.	Housing tenure.
Partner's wage (£ 1/10) Partner's wage squared (partner's wage in £)^2 divided by 10000	What is your partner usual take-home pay, after deductions for tax and NI, but including any overtime, bonus, commission, tips, etc.
Weekly unemployment benefits (£1/10) Weekly unemployment benefits squared (weekly unemployment benefits in £)^2 divided by 1000	Unemployment benefit per week.
Local situation	
Proportion of unemployed and sick in LA Proportion of unemployed and sick in LA squared	Unemployment and sickness rate in the Local Authority in which the respondent lives in 1981 (from 1971 census).
South East (Base) Greater London, South West, West, West Midlands, East Midlands, East Anglia, Yorkshire Humberside, North West, North, Scotland.	Region in which the respondent lives in 1981.

Appendix B: Table B.3.1: Summary statistics

	Whole data set			Parsimonious specifications		
	Obs.	Mean	S.E	Obs.	Mean	S.E
Would move	1142	0.377	0.485	710	0.377	0.485
Would accept lower pay	1064	0.526	0.500	710	0.555	0.497
Would accept lower skill content	1055	0.587	0.493	710	0.576	0.495
Personal characterictics and situation						
Left school at 18 or older	12467	0.198	0.399	710	0.110	0.313
Has post-school qualification	15895	0.376	0.485	710	0.363	0.481
Number of unemployment spells	5572	1.747	1.172	710	2.506	1.502
Male	18483	0.517	0.500	710	0.585	0.493
Left previous job voluntarily	3281	0.568	0.495	710	0.368	0.482
Above average in math test (7)	13410	0.435	0.496	595	0.380	0.486
Above average in reading test (7)	13438	0.618	0.486	596	0.529	0.500
Contact with employment services	1152	0.847	0.360	710	0.854	0.354
Look for full-time job	1151	0.777	0.417	710	0.751	0.433
First job social status						
Never worked	12285	0.023	0.149	-	-	-
Professional/intermediate	12285	0.132	0.338	710	0.049	0.217
Skilled manual	12285	0.248	0.432	710	0.314	0.464
Other manual	12285	0.214	0.410	710	0.334	0.472
Last job						
Own wage (£1/10)	3170	4.375	3.072	710	5.669	2.874
Own wage square ((own wage in £)^2 divided by 10000)	3170	0.286	0.678	710	0.404	0.535
Wage covered by union bargaining	2930	0.431	0.495	710	0.458	0.499
Family structure and income						
Partner works	12383	0.388	0.487	710	0.269	0.444
Partner does not work	12383	0.118	0.323	710	0.017	0.129
Female partner works	12383	0.114	0.318	710	0.066	0.249
Female partner does not work	12383	0.085	0.279	710	0.008	0.092
Has living children or care for children	12463	0.260	0.438	710	0.245	0.430
Council tenants	12119	0.146	0.353	710	0.149	0.357
Private tenants	12119	0.084	0.277	710	0.061	0.239
Sharing with relatives	12119	0.380	0.485	710	0.585	0.493
Other	12119	0.094	0.292	710	0.082	0.274
Partner's wage (£ 1/10)	10288	3.277	4.537	710	2.239	3.966
Partner's wage square (partner's wage in £)^2 divided by 10000	10288	0.313	0.700	710	0.207	0.480
Weekly unemployment benefits (£1/10)	12462	0.411	1.185	710	1.826	1.215
Weekly unemployment benefits square (benef in £)^2 divided by 1000	12462	0.157	0.592	710	0.481	0.510
Local situation						
Proportion of unemployed and sick in LA	12395	5.164	2.180	710	5.898	2.499
Proportion of unemployed and sick in LA squared	12395	31.419	29.175	710	41.023	38.547
Greater London	12437	0.125	0.331	710	0.068	0.251
South West	12437	0.074	0.262	710	0.055	0.228
West	12437	0.053	0.224	710	0.065	0.246
West Midlands	12437	0.096	0.295	710	0.132	0.339
East Midlands	12437	0.068	0.252	710	0.056	0.231
East Anglia	12437	0.033	0.179	710	0.014	0.118
Yorkshire Humberside	12437	0.089	0.285	710	0.090	0.287
North West	12437	0.115	0.319	710	0.165	0.371
North	12437	0.064	0.244	710	0.114	0.318
Scotland	12437	0.098	0.297	710	0.132	0.339

Appendix C: Additional results on mobility

Table C.3.1: Probit for willingness to move.

	Would move	
	Coeff.	M.E.
Personal characterictics and situation		
Left school at 17 or younger (base)		
Left school at 18 or older	0.874**	33.734
	(0.186)	
Number of unemployment spells	0.123**	4.584
	(0.038)	
Male	0.075	2.778
	(0.160)	
Left previous job involuntarily (base)		
Left previous job voluntarily	0.396**	15.020
	(0.127)	
Above average in math test (7)	-0.022	-0.810
	(0.131)	
Above average in reading test (7)	0.139	5.171
	(0.134)	
Contact with employment services	0.290	10.327
	(0.177)	
Look for full-time job	0.036	1.347
	(0.167)	
First job social status		
Never worked	1.267**	46.599
	(0.343)	
Professional/intermediate	0.293	11.350
	(0.282)	
Non-manual (base)		
Skilled manual	0.343**	13.066
	(0.171)	
Other manual	0.029	1.082
	(0.168)	
Last job		
Own wage (£1/10)	0.133**	4.982
	(0.058)	
Own wage squared ((own wage in £)^2 divided by 10000)	-0.543*	-20.281
	(0.281)	
Family structure and income		
No partner (base)		
Partner works	-0.841	-27.992
	(0.821)	
Partner does not work	-0.408	-13.838
	(0.966)	
Female partner works	0.859**	33.258
	(0.407)	
Female partner does not work	1.677	55.003
	(0.944)	
Has living children or care for children	-0.242	-8.775
	(0.174)	
Owners or buying (base)		

Table C.3.1 (ctd.)

Council tenants	-0.197	-7.144
	(0.331)	
Private tenants	0.349	13.548
	(0.340)	
Sharing with relatives	0.212	7.826
	(0.302)	
Other	0.247	9.515
	(0.311)	
Partner's wage (£ 1/10)	-0.059	-2.203
	(0.147)	
Partner's wage squared (partner's wage in £)^2 divided by 10000	0.441	16.451
	(0.636)	
Weekly unemployment benefits (£1/10)	0.028	1.046
	(0.106)	
Weekly unemployment benefits squared (weekly unemployment benefits in £)^2 divided by 1000	-0.306	-11.417
	(0.259)	
Local situation		
Proportion of unemployed and sick in LA	-0.089	-3.325
	(0.079)	
Proportion of unemployed and sick in LA squared	0.006	0.212
	(0.005)	
South East (Base)		
Greater London	-0.010	-0.389
	(0.293)	
South West	0.074	2.800
	(0.293)	
West	0.355	13.767
	(0.282)	
West Midlands	0.360	13.922
	(0.238)	
East Midlands	0.417	16.273
	(0.293)	
East Anglia	-0.103	-3.768
	(0.461)	
Yorkshire Humberside	0.590**	23.047
	(0.270)	
North West	0.643**	24.968
	(0.258)	
North	0.450*	17.464
	(0.284)	
Scotland	0.386	14.905
	(0.257)	
Constant	-1.901**	
	(0.547)	
Observations	669	
Observed probability	0.401	
Pseudo R^2	0.229	
Heteroscedasticity	$\chi^2(39) = 53.651$	
Functional form	$\chi^2(1) = 3.274$	
Normality test	$\chi^2(2) = 5.528$	

See notes to table 3.3.

Chapter four

A Micro-analysis of the Consequences of Parental Unemployment

4.1 Introduction

In this chapter, we are interested in determining the precise contribution that the economic situation of parents has on the social behaviour of their children. High unemployment and long-term unemployment present a potential danger to social stability. Unemployment affects the morale of people who experience it and may lead to social unrest (for example an increase in racism or crime). Given this background, a logical step is to study how this affects the children of the unemployed in their education, future employment and social behaviour. This chapter is interested in the effects that parental unemployment and long-term unemployment have on the social behaviour of children. In addition to the lack of financial resources (which has an obvious influence on the quality of life of these children), the depressed and tense state of the parents may affect their children's educational development and lead to disturbed social behaviour. The idea is therefore to determine the extent to which parental unemployment leads to anti-social behaviour among children, controlling for other social and psychological factors which could lead to such behaviour. The effects of parental unemployment are likely to be more marked, and indeed might only appear, when that unemployment is relatively long lasting. For this reason, we are particularly interested in the role of long-term unemployment.

Insofar as the family is seen as a critical site for the formation of human capital, the finding of negative influences from unemployment on the children's upbringing may have dramatic implications. We could see the emergence of a group of underclass citizens who are out of the society, this position being inherited from exclusion of previous generations. Such evolution would lead to particular inequalities and enhance the emergence of a dual labour market. If such a vicious circle were identified, there would be many policy implications. Government intervention could be useful, for example in giving incentives to the children of

disadvantaged families to integrate socially early in their development, through state education and through the supply of social activities. The idea would be to try to offset, as much as possible, the negative effects of parental unemployment and long-term unemployment on the development of children. This is also more generally related to the effect of family breakdown on the children concerned.

We find evidence that father's unemployment, in particular when it is repeated, is detrimental to children's outcomes. Moreover, those who, at a young age, have a non-working mother living in couple fare better. Because we control for financial difficulties, all these effects are considered to be additional to any financial effects. We also find that these effects are successfully offset by good parenting (defined below). Other important social factors are also identified.

Few economic studies have been undertaken on this subject. Two recent studies undertaken at the same time as this chapter (Gregg and Machin, 2000 and Hobcraft, 1998) use the same data set as us to carry out closely related analysis. However, our study is different in several ways. In particular, it contains a panel data analysis, and it contains more specific conclusions on the effects of repeated father unemployment and the employment of the mother.

Other related questions have been examined in the literature and, insofar as they help us to develop our argument, we present their main conclusions in section 4.2. Section 4.3 describes the data and econometric models that we use in this chapter. Section 4.4 presents our empirical evidence, and section 4.5 concludes.

4.2 Review of the literature on the determinants of children's outcomes

In order to understand the effect that parental unemployment and long-term unemployment have on children's upbringing, it is interesting to look briefly at the evidence on the way unemployed people cope with their idleness. Studies concerned

with the psychological effects of unemployment generally use data sets built through interviews. The questions relate either directly to unemployment or to the general state of mind of people. They outline two main factors which characterise the experience of unemployment: a financial loss (with associated effects) and direct psychological effects (boredom, feeling of failure). The financial consequences are the most obvious element of unemployment, although financial difficulties may not have the largest effects on well-being. The impact that parental unemployment has on children is likely to depend on the overall situation of the family. With this in mind we examine the specific issue of maternal employment.

It is also interesting to review the extent to which parental attainments affect the achievements of children. Some empirical evidence exists about the influence that the educational attainment and the labour market situation of parents have on the education and the labour market situation of their children. We review this literature in order to determine how important and significant these effects are. The idea is that if parental economic attainment has substantial effects on children's accomplishment, we may think that the influence goes through psychological channels, such as altered work and social values, as well as through economic channels, such as the availability of opportunities, and genetic channels.

We then review the literature that identifies other characteristics that are likely to influence the social behaviour of children. These are the family environment, as well as the external environment and the personal characteristics of the child. Finally, we show the potential consequences for the rest of the economy.

4.2.1 The impact of parental education and labour market situation

4.2.1.1 The financial effects of unemployment and long-term unemployment

Becoming unemployed represents a significant loss of income and it is often associated with a notable decrease in the standard of living. Nickell (1982) finds evidence that lengthy spells of unemployment lead to a fall in occupational status. In a qualitative analysis, based on a survey of unemployed people, White (1991) finds that unemployment benefits are insufficient to cover the basic necessities for which they are meant. Families suffer from serious liquidity constraints. This is particularly significant if we consider that people affected by unemployment generally come from lower paid jobs, and do not have much initial savings or are already in debt when they become unemployed. White also finds that, in the UK, families with dependent children are the worst off. The benefit premium designed to cover the costs of the children is insufficient so that families find it difficult to renew things like clothes, shoes and large items for the home. When unemployment is prolonged, families may have to borrow money (from the bank or the extended family) or use their savings (when they have some). They tend to spend such money on renewing necessities (in particular shoes and clothes for the children). In effect, the money is not used on luxuries such as books or cultural activities which would enhance children's human capital. As unemployment continues, the family has to adapt to this lower standard of living.

There is some evidence of an association between crime and delinquency and low social class (Hakim 1982).[1] In particular, parental unemployment, which is sometimes used to empirically measure parental social class, appears to be related to juvenile crime. Carruth and Oswald (1991), using data on British counties, find some evidence that the number of children in care is related to the level of unemployment in British counties. In particular, they find that if the unemployment rate doubled, the

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[1] Hakim carries out a review of the literature concerning the social consequences of unemployment (poverty, health and mortality, mental health, crime and delinquency and the social fabric generally).

number of children in care of local authorities would be expected to eventually increase by two-thirds. The precise nature of the causal relationships is not clearly determined by the authors, but we can say that higher unemployment may be associated with lower well-being of children.

Financial hardship and unemployment may also have direct effects on health. There is evidence of an association between unemployment and bad physical health, although there is no consensus regarding the direction of causality (Hakim, 1982; White, 1991). Some counter-evidence has also been found; for example Narendranathan et al. (1985) find no evidence in cross-section logit models that spells of unemployment increase the probability of future sickness. Several economists have been interested in the correlation between parental unemployment and children's health. Joyce et al. (1991)[2] use vector autoregression to test the reduced form relationship between unemployment and low birthweight. They cannot find a significant relationship between the two. Others find some corroborative evidence. For example, Costa (1999) finds that differences in birthweights by income class exist, even though they have decreased over the century because of improved knowledge and technical change.[3] The latter decrease in differences is an example of how public policy aimed at improving health care as well as technical development can restore the balance between families.

There is some evidence that unemployment and financial difficulties increase the level of stress, especially among those who have borrowed money (Eckenrode and Gore, 1990). Tensions develop in the family, as they do not have the financial means

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[2] Joyce et al. use the percentage of low birthweight as a measure of infant health (they assume that the birthweight is not affected by technological change). They test whether unemployment (cyclical or structural) explains low birthweight (in the state of Tennessee) controlling for lagged value of low birthweight, seasonal dummies, and the percentage of black births.

[3] She regresses birthweight on the log of income and controls for observable genetic factors, maternal health and factors specific to a pregnancy among babies born after at least 37 weeks.

to face any crisis. It can be expected that the situation may be even worse when unemployment is not expected to stop, since there is no expectation that repayment will become easier at some future time.

4.2.1.2 The psychological effects of unemployment and long-term unemployment

Negative psychological effects can stem directly from the loss of job and from the financial hardship associated with unemployment. There is a large literature on the topic in different disciplines, such as sociology, psychology, and political theory (Gill, 1999; Jahoda, 1982; Fryer and Payne, 1986). Gill (1999) reports how these disciplines consider the non-pecuniary costs of unemployment to be as important to individuals' well-being as pecuniary costs.

In our societies a job is associated with social status. Losing employment is equivalent to losing one's place in society. Hakim (1982), White (1991) and others report that this particular type of distress depends on the actual commitment to work. More stigmas may also be attached to losing a job in an activity where unemployment is low. For example, people who have lost a white-collar job seem to be more affected. However, it is also a question of pride: it may be that blue-collar workers will tend not to admit missing their job. Unemployed people may have a feeling of failure and may also be humiliated by the judgement of other people. Akerlof and Yellen (1985) also find that prime age men represent the group which suffer the most from unemployment,[4] and this does not seem to have changed over time.

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[4] They compare two measures of unemployment: one from the Current Population Survey (CPS), which counts current unemployment, the other from the Work Experience Survey (WES), which relies on retrospective report of spells of unemployment. Considering that a more salient experience will be better remembered, they construct a ratio of the two series (U_{wes}/U_{cps}) and study its evolution over time. The smaller the percentage of CPS unemployment that is remembered after one year, the less painful unemployment was.

As unemployment continues and people enter what we call long-term unemployment, the situation evolves. Things are less straightforward. On the financial side, nothing has changed. Long-term unemployment necessitates a reduced social life, with the consequence that a feeling of boredom may develop. Families cannot go on holidays, have to cut down social outings and other activities. The psychological effect of this depends on the habits that were prevalent before unemployment. Certain costless activities may still be undertaken. Children may be adversely affected if the family shares a lower level of social enjoyment because of financial difficulties. Parents are isolated from usual social encounters and children cannot participate in activities with others. They may associate with other children coming from a similar background.[5] Their social isolation (either individual or as a group) starts early in their life. However, having parents at home may also be an advantage for the children: they are more available for homework, games, etc. At the same time, if the parents are bored and demotivated this may affect the children. The direction of the effect is therefore not clear-cut. There are, a priori, grounds to believe that the effect runs in both directions; in fact it depends on the situation of the individual and their capacity to cope.

Using the General Health Questionnaire (GHQ) score, Clark and Oswald (1994) observe that the unemployed have a lower level of psychological health or "happiness"[6] than employed people. Winkelmann et al. (1998) find consistent evidence; in their study for Germany,[7] the non-pecuniary costs of unemployment

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[5] Important effects are at work here. The external environment of the child is expected to have various effects, through peer group effects and through the "example" it may give. We develop the role of external environment in determining children's outcome later in section 4.2.2.2.

[6] The level of happiness is measured by considering the answer to the GHQ questionnaire and summing the number of times the person places himself or herself in the fairly stressed or highly stressed category. This is a measure of their well-being.

[7] They use the German Socio-Economic Panel, in which there is the following question: How satisfied

exceed the pecuniary costs associated with the loss of income while unemployed. Being out of the labour force also reduces satisfaction but to a lesser extent than unemployment.[8] This evidence seems to depend on how well-being is measured, for example Björklund (1985) finds a relationship between unemployment and mental health[9] in cross-section but it disappears in fixed effects models. However, the latter study is quite limited as it suffers from a lack of observations. On balance, the existence of an effect appears quite robust.

In Clark and Oswald's study, long-term unemployed people show a higher level of happiness than people unemployed for less than a year. The authors do not give an explanation for this result, but several explanations are possible. Some think that the long-term unemployed eventually find a way of enjoying life within the limits of their new living standard. It is also possible that those who hate unemployment find jobs more quickly through more active job search. Recent evidence (Clark et al., 1999) in this strand of the literature finds evidence of a habituation effect; they conclude that past experience of unemployment reduces the psychological harm of current unemployment. However, there is also contrary evidence; for example Winkelmann et al. (1998) find that the duration of unemployment does not have a statistically significant effect on life satisfaction; the satisfaction of the unemployed does not improve as they stay in unemployment for a further consecutive period.

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are you at present with your life as a whole? The answer to the question is given on an ordinal scale from 0 to 10.

[8] Their results are based on a fixed effects logit model, with life satisfaction as dependent variable (equal to 1 if satisfaction score is 7 or above, to 0 otherwise) and labour market status, marital status, age, health, duration of unemployment spell, and log of household income as explanatory variables. They test the robustness of their results by including interaction terms between labour market status and age; by using a different cut-off point for life satisfaction (namely, 5 instead of 7); and by using a shorter time period in order to limit attrition of the sample. Their results are not affected.

[9] Mental health is measured through questions related to mental symptoms such as having difficulties sleeping, having nervous problems, and through questions related to somatic symptoms such as having

This idea is also developed in the sociological literature. For example, Warr and Jackson (1987) find that the adaptation to unemployment depends on several factors (such as attachment to work, financial hardship, social support, etc.).[10] There is also evidence that the financial degradation does not worsen any more after one or two years of unemployment (White, 1991). Even though certain people will adapt constructively (by improving their life in some way), others will either adapt to unemployment with resignation (with reduced expectations, autonomy and competence) or enter despair. Again, we may expect these to have opposite effects on the children: "happier" parents will be supportive whereas resigned parents will create a certain unrest. There is some evidence that resigned adaptation is very common among 25-55 year-olds. For example, Akerlof and Yellen (1985) found that the experience of unemployment is less memorable among young people (less than 25 years old) and older people (more than 55 years old). This could mean that children are more likely to be exposed to "unhealthy" adaptation. The resignation of their parents towards the labour market may be transmitted to them in the form of lower motivation. However, this is again not an obvious effect and the exact opposite may happen. It is therefore essential to know the net outcome, and this can only be done through an empirical investigation. There is also evidence that parents employed in low standard jobs may be distressed and consequently give less attention to the raising of their children (Parcel et al., 1994). More generally, this evidence supports the idea that depressed parents may provide the child with a rearing of lower quality.

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stomach pains or high blood pressure.

[10] They use data obtained through interviews with unemployed people in the UK. Their sample consists of 222 men who had been unemployed for at least 19 months (time between the first and the last interviews). They regress variables such as the changes in psychological ill-health (as measured by the GHQ questionnaire), in reported general health, in non-money problems, in money problems and in financial strain on the following groups of independent variables: commitment to work, availability of money, age group, social relationships and continuing health condition.

The children of workless families may also be affected in another way. Eckenrode and Gore (1990) report qualitative results of interviews with couples facing unemployment. They find evidence of tension arising between the partners due not only to financial hardship, but also to the need for a redefinition of roles within the family. In cases where the wife was not working, having an unemployed husband at home may become stressful, especially if they were not used to spending that much time together. Support and comfort can rapidly decline as the unemployed person stays idle and the partner starts wondering whether the effort made is sufficient. Such tensions may distress the children, and may lead to family disruption (see below for an analysis of its effects).

The link with anti-social behaviour is not clear, but can be better understood thanks to the analysis of the sociologist Coleman (1988). He distinguishes between three components in "family background": the financial capital, the human capital and the social capital. The first component corresponds approximately to the wealth of the family. Parents' education measures the second component. Finally, social capital corresponds to the structure of the relations in the family. Coleman argues that the latter is as important as the former two components. In particular social capital is complementary to human capital; it gives children access to the human capital of their parents. A lack of social capital can be observed in families where one parent is missing, but also in families where the parents have few interactions with their children. This is interesting for our purpose because we argue that parental unemployment may affect interactions between the various family members. In particular, the quality of parenting may be affected by psychological distress associated with job loss. Coleman (1988) measures lack of social capital by means of the number of siblings (a higher number of siblings dilutes the mother's attention to

each one) and with the mother's expectation for her child to go to college. He finds that it is associated with higher school drop out rates.

It is also important to note that the presence of children may have an effect on the duration of unemployment of their parents. Parents, in particular the head of the household, may indeed have stronger incentives to find a job. Such evidence comes from the literature on the search behaviour of unemployed people (see for example Ahn and Ugidos-Olazabal (1995) for Spain[11]). Further evidence is found in the literature interested in well-being and unemployment. Clark et al. (1999) show that the "habituation to unemployment effect" which they find for men disappears if these men have children. We can infer that unemployed parents search harder and have continuous incentives to find a job. This may also lead us to think that parents who suffer protracted periods of unemployment are in a particularly weak position in the labour market.

From the previous discussion we can say that, through their financial impact, unemployment and long-term unemployment may lead to anti-social behaviour. The psychological effects that accompany the experience of unemployment are difficult to interpret in such studies. The negative psychological effects of unemployment are recognised by the unemployed themselves, and we argue that unemployment may disturb the relationships between the parents and the children and affect the quality of parenting. It is not clear however that they lead to anti-social behaviour on the part of their children.

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[11] They use data from the Spanish Labour Force Survey for the second quarters of 1987, 1991 and 1993. They estimate a bivariate probit model of the participation and employment probabilities (for men and women aged between 16 and 21 years). In the participation equation, the explanatory variables include the labour market situation of the father and of the mother, their schooling, an age dummy, year dummy, and the unemployment rate. For the employment equation, they include the parents' situation, year dummies and the unemployment rate, and the age and schooling of the young persons.

4.2.1.3 The effect of maternal employment on children's outcomes

It has been argued that the employment of the mother may have an adverse effect on children. For instance, Coleman (1988) explains that the social capital which exists in the parent-child relationship is weakened when the mother works outside the home. There is some empirical evidence that early maternal employment (in the first year of life) has a small negative impact on the cognitive development and the social behaviour of children (Han et al. 2000).[12] Later employment has sometimes been found to have an offsetting positive impact (Blau and Grossberg, 1992). For the UK, there is some evidence (Francesconi and Ermisch, 1998) that mother's employment during childhood is associated with favourable outcomes for her offspring during young adulthood. Francesconi and Ermisch find that mother's employment is associated with lower risk of unemployment and distress (derived from a set of indicators of well-being).[13] However, no consensus has been reached in the literature as to the actual effect of maternal employment on the children. There are various hypotheses to explain how early maternal employment affects later outcomes of children. For example, Waldfogel et al. (2000) report five: maternal separation, lack of breast-feeding, low stimulation by alternative carer, type of childcare arrangement, and role of the father. In this thesis, we concentrate on the combined effect of the employment of the mother and the other characteristics of the household (father's labour market status, financial difficulties, marital status, etc.) on children's

[12] They use ordinary least squares to regress test scores on a set of demographic and socio-economic variables and alternative sets of variables describing the mother labour market status over the child's early lifetime.

[13] They use the British Household Panel Study. They regress various outcomes (education, unemployment, leaving home, early childbearing, and health) on the proportion of months the mother worked during childhood, age, year of birth, sex and mother's education and economic circumstances of the family of origin (including family income, whether parents are homeowner, length of time at current parental address), all measured when the child is 16 years old. They use ordinary least squares and within-family fixed effects models.

outcomes. The literature on this topic is limited. A recent example is the US study by Han et al. (2000). They find that the effects of first year maternal employment on cognitive outcomes are larger if there is an unemployed father in the home.

4.2.1.4 Evidence on intergenerational transfers of educational attainment and labour market situation of parents

Some studies are concerned with the extent of intergenerational transfers in families. There has been a renewed interest in these issues recently and investigations have been carried out for various countries. Unfortunately, these studies rarely identify the channel through which such transfers occur.

Antel (1992) finds evidence for the US that daughters coming from a family where the mother is dependent on welfare have a higher probability of later being on welfare. His evidence is limited because of the data he uses (mothers' need for welfare is measured only for one year).[14] In particular, he is not able to determine whether the transmission occurs through decreased labour market opportunities, through a significant change in attitude towards receiving benefits or through characteristics transmitted through the genes. Moreover, Antel is not able to verify whether longer exposure to welfare has more significant consequences. It is indeed reasonable to believe that only protracted periods of welfare will lead to serious changes in attitudes. By analogy, the duration of unemployment becomes very important as it can be thought that only longer periods of unemployment have an intergenerational effect in terms of forming a certain set of work and social values.

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[14] He estimates a two-equation model. The first equation represents the probability that a daughter will be welfare recipient; the independent variables include the welfare participation of the mother, which is an endogenous variable because mother and daughter may share the same characteristics such as living in the same neighbourhood or even a common attitude to work or ability. The second equation estimates the probability that a mother will be a welfare recipient.

Numerous studies are concerned with the effect of parental background and education on the educational attainment of the children. Micklewright (1989), using the National Child Development Study, found that the decision of young people to stay on at school after the compulsory age is apparently influenced by the social class and the education of their parents.[15] This holds even when taking into account ability of the pupil and the quality of the school he or she attends. More recently, Ermisch et al. (1997) found that the mother's educational attainment is significantly correlated with the educational attainment of her children, particularly her daughters. More generally, it seems that there may be evidence of a link between parental and children's educational attainment.

Ahn and Ugidos (1996) also find evidence of a link between parental situation in the labour market and the educational achievement of children.[16] They find that having unemployed parents is generally associated with a lower educational attainment. Their results also show that children whose father is employed in the public sector have improved educational opportunities. Although they cannot explain why they find this latter result, it is useful to note that father's occupation is a relevant determinant of children's educational attainment.

Other studies analyse the link between parental labour market situation and children's labour market situation. Various mechanisms are at work here. Having long-term unemployed parents may create a need for their children to start working

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[15] He uses a logit model to estimate the probability of leaving school at 16. The explanatory variables he uses are the following: father (mother) stayed on at school beyond minimum age, father's social class, mother's social class, number of siblings, net household income (or financial trouble in family), type of school, control if living in Wales and in London or South East, maths and comprehension scores.

[16] They study the determinants of individual outcomes of young people aged between 16 and 21. These outcomes are the following: to be enrolled at school versus participating in the labour market and being employed versus being unemployed. They consider that young individuals who are enrolled at school have more education opportunities than others.

early instead of taking further education (Ermisch et al., 1997). Evidence seems to suggest that having unemployed parents generally increases the risk of unemployment of their children (Ahn and Ugidos, 1996). As we have seen above, the type of job held by parents is also important. The results obtained by Ahn and Ugidos for Spain (1996) indicate that a self-employed father decreases the probability of unemployment of his children. For the UK, Dearden et al. (1997) also found clear links between fathers and their children concerning their labour market earnings and years of schooling.[17] They also identify some intergenerational mobility: some upward mobility from the bottom of the distribution of earnings and some downward mobility from the top. This means, among other things, that parents or public authorities may have some power in influencing the future of less favoured children.

4.2.2 Other factors influencing the social behaviour of children

4.2.2.1 Household composition and situation

The conditions in which the child lives are thought to have an impact on his or her behaviour towards others. We saw earlier that the social capital transmitted to children may be affected by family disruption (Coleman, 1988), and that unemployment may also be one of its causes. This leads us to consider the effects of family disruption on the children (in particular the effect of divorce).

There is evidence that family disruption has a negative effect on the educational and employment achievement of children as well as on their behaviour with respect to the family they form themselves (Kiernan, 1992).[18] Family disruption,

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[17] As in this chapter, they use the National Child Development Study. They estimate the degree of intergenerational mobility (of income) with a log-linear regression and with a transition matrix.

[18] Kiernan, using data from the National Child Development Study, provides the following statistical analysis: she regresses early adulthood behaviour variables (such as forming a partnership before 20, having a child by 20 and extra-marital birth) on the family situation at 16 and background characteristics.

in particular divorce, has effects similar to those of unemployment on adults. Clark and Oswald (1994) found that, in a cross-section, divorce has a strongly negative coefficient in well-being equations. Although the effect of divorce may not be causal, the result shows that family disruption is associated with lower well-being. There is also evidence from sociology that the well-being of children in step-families is less than that of children in two-biological-parent families and no better than the well-being of children in single-parent families, even though on average the latter are more likely to be in poverty (Cherlin et al., 1994). From the economic literature, Case et al. (1999a) find, for the United States and South Africa, that the presence of the biological mother appears to increase expenditure on food.[19] For South Africa, they can further say that it increases expenditure on healthy food, particularly in households where the biological mother is head or spouse's head of the family. As far as the consequences for the children's behaviour are concerned, again two types of effects may be inferred.

First, the psychological effect of family disruption may also lead to a disrupted social behaviour. For example, Kiernan (1992) finds some evidence that young people living in step-families are more likely to leave home because of frictions than those from intact families. One well-established result of the sociology literature is that children in step-families, in particular girls, leave their households at an earlier age than do children in single-parent or two-parent households (Cherlin et al., 1994). Children raised in step-families have been found to have academic problems, to exhibit behavioural problems, to be less socially responsible and competent and to have lower self-esteem than children in intact families (Cherlin et al., 1994; Hetherington et al., 1998). Several reasons have been given for these findings. Step-

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[19] They regress food expenditure at home on various controls notably the number of children and the household's income, the explanatory variables of interest are the number of children with step-

children may be psychology scarred by the experience of divorce, parenting may be of lesser quality if step-families which suffer more from stress and conflict (Hetherington et al., 1998). Step-families may choose to invest less in children because parents may expect less future contacts with non-biological children, and less money transfers (for a literature review see Bergstrom, 1997). Step-parents may also be less interested in sustaining someone else's genetic line. Duncan et al. (1994) find for the United States that the social behaviour of the children is likely to be affected by the transition to a single-parent household; even controlling for the income effect they find that children living in single-parent households have a greater probability of having behaviour problems.

Second, family disruption may lead to financial hardship, especially when the family is reduced to a one-adult household. Ermisch et al. (1997), using the British Household Panel Study's data in ordered logit statistical models,[20] find evidence of a small negative association between single parenthood and the educational attainment of the children (in particular sons), this effect occurring mainly through reduced economic resources. Duncan et al. (1994) also find that, through the income effect, test scores at five years old are lower for children living in single-parent household.

Other family characteristics may have an effect, having a large number of siblings has been shown to reduce the amount of schooling received (Micklewright, 1989 and Coleman, 1988). We think that such a variable could therefore also affect the social behaviour of the child. More generally, the behaviour of the parents towards their child - i.e. the interest of the parents in their child's achievement - has potential effects on his or her behaviour. The type of accommodation tenure has been found to

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mother/father, with adoptive mother/father, and so on for different types of family structures.

[20] They analyse the effects of family background variables on the educational outcome, which is represented by four educational categories (in ascending order: no qualification, CSE and O level, A-level, higher qualifications).

have a significant influence on children. Using four different US data sets, Green and White (1994) found that children who have parents who own their home are more likely to stay on at school (even when controlling for self-selection effects), and they also find that they are less likely to be arrested.[21]

Other characteristics of the (extended) family background have been found to have significant impacts on the children's social outcome by Case and Katz (1991). In particular, they show that children tend to reproduce the behaviour of their parents.[22] For example, having a family member who has been in jail is strongly related to youth criminal activity. Gregg and Machin (2000) find, in a study similar to that carried out in this chapter,[23] that children with parents who stayed on at school after 15, who did not have financial difficulties or children who never lived in a lone mother family, have better school attendance and tend to stay on at school. Finally, children who have spent time in care are found more likely to be in contact with the police. Hobcraft (1998) carries out an extensive study of various childhood characteristics on children's outcomes. Among his findings, we note that educational failure is found to be increased by lack of parental interest in schooling and childhood poverty or for children of lower social classes.

4.2.2.2 External environment

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[21] They estimate probit models with the following dependent variables: youth still at school at 17 or have graduated, youth have a child at 18, youth have been arrested. The independent variables include various controls (depending on the data set). They also estimate a bivariate probit model to check whether there is a selection bias (i.e. the effect of the homeowner variable is due to the fact that homeowners are different from the others, not because of homeowning as such). They found no support for the selection bias hypothesis.

[22] Genetic heritage cannot be ruled out as an explanation here.

[23] They regress outcomes at age 16 (school attendance, contact with the police and staying on at school) on individual characteristics, family structure, and parents' characteristics. They use a tobit model for school attendance and a probit model for the other outcomes.

The environment in which the child lives is considered to influence their behaviour. There has been a marked interest in this question in the literature. The external environment has generally been found to have an effect in addition to family background variables.

For a child, the area in which he lives and the school he attends defines the external environment. Often, because of the system of catchment area for school, the friends made at school will be the same as in the area of residence of the child. The external environment may be thought of as setting an example for the child; living in a depressed area will give a certain image of life. Glaeser et al. (1996) show in a study of US data the importance of social interactions (i.e. positive covariance across agents' decisions about crime) in determining criminal behaviour, especially among young offenders. The external environment influence also goes through the friends of the child. For example, there may be a peer group effect whereby the child will behave according to what he thinks is expected by the group to which he belongs. Case and Katz (1991) found that peer behaviours (defined as the young neighbours' observed behaviour) have substantial and significant effects on youth involvement in crime, drug use, church attendance, alcohol use and idleness.

4.2.2.3 Personal characteristics

Even if the behaviour of the child is in part determined by the influence of his family and of his environment, the personality of the child also plays a role in the outcome. In the same way as their individual characteristics may protect them, or worsen the consequences of divorce for children,[24] their reaction to their father's unemployment may be determined by their personality. A large part of these characteristics are not measurable or observable. However, one can observe the

[24] See Hetherington et al. (1998) for a review of literature on this topic.

manifestations of this personality. For example, the ability of the child at school may be a good indicator. Success at school may indicate a good integration in the school system, and therefore in society as a whole. For instance, Gregg and Machin (2000) find that better reading ability (for boys) and maths ability (for girls) is associated with less contact with the police. Personal characteristics also include factors such as the ethnic group and any physical or mental handicaps.

4.2.3 The consequences for the labour market and the economy

Although the only way for workless families to improve their situation is to obtain employment, certain means of financial relief are denied to them; they fall in the poverty trap. In cases where the father is unemployed, the mother often has no incentive to work because of means tested benefits (the additional revenue from her work would not compensate for the induced loss in benefits). There may also be other psychological and practical reasons for the partner of an unemployed person not to work. These have been observed in France: Benoît-Guilbot and Clémençon (1994) cite the French saying "Qui se ressemble s'assemble" which suggests the partners generally come from the same social and educational background. They probably both face a depressed labour market. Moreover, they may share a negative attitude towards work and decreased network of relations. Also, their social network may be reduced to other unemployed people so that there is no clear means of breaking unemployment through social contacts.[25]

What is described in the previous paragraph could partly explain the employment patterns discussed by Gregg and Wadsworth (1996). They study employment and non-employment rates at the household level in 13 OECD countries.

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[25] Social contacts with employed people and potential employers are generally acknowledged to play a significant role in the finding of a job (see for example Ahn and Ugidos (1996) or Benoît-Guilbot and

For these countries they observe an increase in the percentage of households where all working age persons are not working and a decrease in the percentage of "mixed" households[26] (over the 1983-1994 period). For seven of these countries (including the UK), they observe what they call employment polarisation, in other words a simultaneous increase in the proportion of households where all adults work and the proportion of households where no adult work. They also suggest that better labour market performance would not necessarily solve the issue. They indeed observe that in the UK, where employment has increased, it was not sufficient to offset this phenomenon. For each type of household (two-adult and three-adult), the presence of dependent children appears to decrease the workless rate, except for one-parent households where this is reversed, especially for Ireland and the UK.

Given this evidence, the question of whether parental unemployment and long-term unemployment have negative effects not only on the labour market situation of their children but also on their social behaviour, notably their tendency to crime, becomes crucial. Given that unemployment and long-term unemployment are concentrated among certain families where all adults are unemployed (in particular single parent families), the finding of a strong impact would indicate further polarisation not only in the labour market but also in the economy and society in general. Moreover, if there were evidence that this impact has long-term consequences (i.e. the negative effects persist throughout the child's life), this would mean the emergence of a group of "secondary citizens". The seriousness of these consequences will depend on the size of the effects we have reported and also on their persistence. The next chapter is interested in the latter question.

Clémençon (1994)).

[26] Where there is a mix of working and non-working adults.

The economic and social costs are potentially important. The social costs come from the huge inequality which would exist (and already exists to a certain extent) between people coming from less favoured families and the rest of the population. This situation would potentially lead to social unrest and social instability, which is evidenced by the effects of unemployment in certain suburbs or inner cities. The economic costs are linked to the activities of these "secondary citizens". The rest of the economy would suffer direct financial costs due to a higher level of crime and indirect costs due to lower human capital and foregone revenue from tax. The economy would potentially suffer lower growth and/or higher insecurity. A current and important example can be found in the United States. Although the US has a low administrative unemployment rate, the generations of people segregated from society are very costly, with 2 percent of men of working age in jail according to Freeman (1996). The problem is so acute that certain economists have pointed to the need for policy targeted at preventing the children from entering crime, in addition to incarceration of criminals. The American public seems ready to see the authorities spend billions of dollars on policies with such designs (Greenwood et al., 1996).

4.3 Data and model

4.3.1 Data

We use the British National Child Development Study (NCDS). This data set is based on a sample of children born between 3 and 9 March 1958. Five surveys have been undertaken at ages 7, 11, 16, 23 and 33. The first three waves will be used in this chapter and estimations will be carried out for males and females separately. The first two waves consist of an interview with the parents, questionnaires completed by the school, results from a medical examination conducted by the school's health service and tests of ability of the subjects themselves. The third wave is basically the same,

with the addition of an interview of the cohort members. The variables used are described in appendix.

4.3.2 Models and method of estimation

We use limited dependent variable models. In order to take advantage of different aspects of the data set, two types of model will be used to address several issues. The first is a panel data model which is used to study the relationship between family and external environments and the social behaviour of children aged between 7 and 16. These types of models enable us to control for individual effects that may interfere with the relationships we want to outline. For example, children who have bad outcomes after their father become unemployed or their parents divorce may have specific characteristics (such as a difficult temperament) which prevent them from adjusting positively to the new situation (Hetherington et al., 1998). The second model is a cross-section model, which is used to study the relationship between past personal characteristics, family background and external environment and the probability of facing particular events at sixteen. These events are the following: being in contact with the police, being referred to an agency, and having a bad behaviour. In these cross-section models, we use the vast personal information available in the data set to try and control for individual effects. Our specifications take into account a large range of possible factors, but there may still exist further unobserved characteristics. Our models are limited in that sense.

Before continuing, we should note that we do not assume that the causality between the explanatory and the dependent variables has been proven, although for simplicity of exposition, we might talk about "effects". In part, the aim is to identify associations between these variables.

4.3.2.1 Panel data model

An unbalanced panel data model[27] is suitable for analysing variables measured consistently in each of the first three sweeps. The dependent variable is discrete and takes the value one when the event occurs and zero otherwise. We run a fixed effects logit model which uses conditional maximum likelihood estimation. It enables us to control for individuals' heterogeneity. The fixed effects model has an advantage over the random effects model because the latter assumes that the error terms are uncorrelated with the regressors (something which is likely to be untrue when dealing with data on individuals). The random effects model also assumes that the correlation between two observations of a group is always the same over time.[28]

The probability of facing an outcome conditional on exogenous factors in the fixed effects logit model can be written as:

$$\Pr(y_{it} = 1 \mid x_{it}) = F(\alpha_i + x'_{it}\beta) \qquad (1)$$

where F is the cumulative logistic distribution:

$$F(z) = \frac{\exp(z)}{1 + \exp(z)} \qquad (2)$$

and $i = 1, 2, \ldots, n$ denotes the individuals and $t = 1, 2, \ldots, T_i$ denotes the observations for the ith individual.

The method of estimation consists of maximising the following conditional log-likelihood function (Chamberlain, 1980):

$$L^c = \prod_{i=1}^{n} \Pr(y_{i1}, \ldots, y_{iT_i} \mid \sum_{t=1}^{T_i} y_{it}) \qquad (3)$$

This means that the likelihood for each set of T observations is conditioned on the number of ones in the set. The estimator of the vector of coefficients of the

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[27] The data are unbalanced because some variables are missing in one or two years.

[28] Given that the time period between any two observations varies in our data set, the correlation between two observations may vary over time.

explanatory variables will be consistent even for small n, provided that the usual regularity conditions are satisfied.

We tested the assumption of heterogeneity imbedded in the fixed effects model with a Hausman test (see page 900 in Greene, 1997). We used a simple logit model (with a constant term common to all individuals) as alternative and we find that the tests reject the hypothesis of homogeneity in all the specifications.

In order to interpret the coefficients given in these estimations, we will refer to the odds ratio.[29] These are the exponential of the coefficients. They correspond to the ratio of the odds evaluated at one place to the odds evaluated at another place, the odds being equal to the probability of an event occurring divided by one minus this probability. For example, the odds ratio for x_1 is:

$$odds\ ratio = \frac{o(b_0 + b_1(x_1 + 1) + b_2 x_2 + ... + b_n x_n)}{o(b_0 + b_1 x_1 + b_2 x_2 + ... + b_n x_n)} \qquad (4)$$

the odds $o(.)$ can be expressed as:

$$o(x_{it}' b) = \frac{p}{1-p} = \exp(x_{it}' b) \qquad (5)$$

with the probability p written as:

$$p = \frac{\exp(x_{it}' b)}{1 + \exp(x_{it}' b)} \qquad (6)$$

Finally, combining (4) and (5) the odds ratio is written as:

$$odds\ ratio = \exp(b_1) \qquad (7)$$

In other words, the ratio of the odds for a one-unit increase in x_i (or a change from zero to one for dummy variables) is $\exp(b_i)$.

The weakness of this type of model is that individuals who have a constant behaviour across time are not taken into account. For our purpose, we want to be able

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[29] Marginal effects and predicted probabilities can not be calculated here because the individual fixed effects are not estimated.

to account for these people as well. We therefore also estimate a random effects probit model.[30] The latter enables us to include time-invariant variables. It therefore brings us more information concerning these variables, although we run the risk of omitting some relevant and unobservable variables.

The model can be expressed in the following way:

$$y_{it}^{*} = x_{it}'\beta + \varepsilon_{it}, \qquad (8)$$

with $\varepsilon_{it} \sim N[0,1]$ and $\varepsilon_{it} = v_{it} + u_i$, $i = 1, \ldots, n$, $t = 1, \ldots, T_i$

$$y_{it} = 1 \text{ if } y_{it}^{*} > 0, \text{ and 0 otherwise.} \qquad (9)$$

We then have:

$\Pr(y_{it}) = \Phi[q_{it}(x_{it}'\beta)]$, where $q_{it} = 2y_{it} - 1$, and Φ is the Normal cumulative distribution function. The contribution of group i to the likelihood for the sample is:[31]

$$L_i = \Pr(y_{i1}, y_{i2}, \ldots, y_{iT_i}) \qquad (10)$$

This likelihood function presents some computational difficulties. Butler and Moffitt (1982) and Greene (1997) show a simplification which enables us to maximise the likelihood function. The routine has been built in Stata (StataCorp, 1999) and we will use it to compute our estimates. A test of no cross-period correlation is carried out and reported at the bottom of the relevant tables.

For dummy explanatory variables, marginal effects can be calculated as the difference in predicted probabilities:

$$\Pr(y_{it} \mid D = 1) - \Pr(y_{it} \mid D = 0) = \Phi[q_{it}(z_{it}'\beta + \theta)] - \Phi[q_{it}(z_{it}'\beta)] \qquad (11)$$

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[30] Because we did not find a reliable statistical test, we do not carry out a formal test to choose between the two models. We consider and compare the results of both models.

[31] See Butler and Moffitt (1982) and Greene (1997) for the full derivation of the likelihood function.

where z if the set of explanatory variables minus the dummy D, and θ is the coefficient associated with the dummy. Note that when the dummy is part of a set of categories (for example a region), the other categories are set equal to zero.

When the explanatory variable is a continuous variable, the marginal effect is calculated as follows (Arulampalam, 1999):[32]

$$\frac{\partial[\Pr(y_{it})]}{\partial x_{jit}} = \frac{\partial[\Phi(x'_{it}\beta)]}{\partial x_{jit}} = \phi(x'_{it}\beta)\beta_j \qquad (12)$$

This is interpreted as the change in the predicted probability for a marginal change in x_{jit}.

4.3.2.2 Cross-section model

In this model, the discrete dependent variables are taken from the third sweep of NCDS (when the child is 16). The explanatory variables are taken from the first three waves. This type of model enables us to study additional dependent variables, as a lot of interesting data are available in the third sweep only. We use a probit model as described in the previous chapter.

4.4 The link between the employment situation of parents and their children's social behaviour

The data set enables us to investigate several possible ways in which the labour market situation of parents can affect their children. The primary aim of all these estimations is to check whether the unemployment experience of the parents has a significant effect when other factors are taken into account. In particular, it is

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[32] We should note here that, as we do not compare these results with a pooled probit or other specifications, we do not feel it is necessary to carry out the adjustment advocated by Arulampalam (1999). This adjustment consists in multiplying each coefficient by the scalar $\sqrt{1-\hat{\rho}}$, $\hat{\rho}$ being the estimated coefficient of correlation between two successive error terms for the same individual.

interesting to see whether repeated periods of parental unemployment have an effect on children's outcomes once financial difficulties as well as social and psychological factors have been taken into account.

4.4.1 Investigation using panel data

4.4.1.1 Specification

The specifications for the fixed effects logit and the random effects probit are similar. The first idea is to investigate the factors influencing the social behaviour of the children, in particular those that can trigger bad behaviour. We construct an index that defines being badly behaved (as reported by the mother) as adopting any of the following behaviours: being irritable, fighting with others, being destructive and being disobedient.

We distinguish between two groups of explanatory variables which are believed to have a significant influence on the social behaviour of the child: the family background (economic and social) variables and the external environment variables (school and regional variables). The family background variables include the joint labour market situation of the parents (or father and mother figures), for example whether they are both unemployed, both working, etc. This is the main variable of interest. We also control for the social class of the father or male head and for whether the family has suffered from financial difficulties. The latter is the only variable related to parental income which is consistently observed in all the interviews during the cohort member's childhood. The social family controls consist of variables indicating the family structure, such as the number of children younger than 21 living in the household, or the presence of any family break-up. We also include housing tenure; in particular we are interested in knowing whether children of homeowners are better behaved (as suggested by Green and White, 1997). Finally, we control for the

interest that the parents have in their children's achievements at school, namely whether they think they should stay on at school. The school variable consists of a dummy indicating whether the child attends a school maintained by a Local Education Authority of the UK as opposed to independent schools, special schools for handicapped children and other schools. The regional controls are simply dummies for the eleven standard regions. In addition, in the random effects probit, we add seven time-invariant variables which may be relevant in explaining the children's outcomes. These are the following: the age of the mother at the child's birth, the age at which the mother and father left school, and several characteristics of the child when he/she was 7 years old (scores at math and reading tests, time to settle in class, and emotional maladjustment).

Around fifty percent of the children are reported to have a bad behaviour (as defined here). This may capture a type of behaviour that is insufficiently unusual for our purpose. We therefore define an "*extreme* bad behaviour" discrete variable which is equal to one if the children have been reported to have, sometimes or more often, at least half of the behaviours just mentioned. Around 8 percent of boys and girls exhibit such *extreme* bad behaviour.

Having investigated factors influencing our indices of bad behaviour, we then examine whether the same factors affect an alternative measure of social difficulties: whether the children have been referred to an agency[33] because of difficulties which have affected their educational progress or behaviour. We should note here that this measure also includes children who have difficulties because of health problems. We

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[33] The agencies are the following:

Sweep 1: School health services, child guidance clinic, school psychological service, education welfare services or school attendance officer, children's department, private specialist.

Sweep 2: Same as sweep 1 plus doctor and probation officer.

Sweep 3: Social services or social work department (including children's department), educational welfare department, police or probation department, child guidance clinic.

will take that into account in our econometric analysis by checking whether child's health variables are statistically significant. The same explanatory variables will be used and they are thought to influence this new dependent variable in the same way as the bad behaviour indices. Before turning to the results of the estimations, it is useful to look at the pattern of the data, in particular to see whether the economic situation in the past has an effect on future outcomes.

Tables 4.1a and 4.1b show some cross-tabulations for boys and girls respectively. The tables show that there is a statistically significant relationship between past family difficulties and children's future anti-social behaviour or difficulties. The proportions of boys and girls with various difficulties at sixteen years of age are significantly higher in the families that suffered from unemployment or financial difficulties than in the others. For example, among the boys coming from a family experiencing unemployment difficulties when they were seven, 28.6 percent were reported to have an *extreme* bad behaviour, while only 7.2 percent were reported to have such a behaviour among the boys coming from families with no unemployment difficulties. The relationship between having a mother who works and *extreme* bad behaviour or being referred to a social agency appears less strong (and insignificant according to the statistical test). A slightly greater proportion of 7- and 11-year-old children having a mother who works have an anti-social behaviour at sixteen, compared to those who do not have a working mother at these ages.

4.4.1.2 Estimation results

Table 4.2a shows the results of fixed effects logit for boys. The first column shows that the parental labour market situation has a statistically significant contemporaneous effect on the probability that the mother reports her child to be badly behaved. Compared to a situation where both parents are working, any other

working arrangement leads to a higher probability of bad behaviour. The odds of being reported are multiplied by around two. Because the coefficients are quite close to each other, we test whether, given that the mother does not work, the unemployment of the father makes a statistically significant difference and find that it does not. We also test whether the employment of the mother makes a statistically significant difference if the father is unemployed and we also find that it does not. Given that we control for financial difficulties, this detrimental effect is in addition to any financial effects. One can infer that an unemployed father will not take advantage of his idleness to take care of his children and might instead have a negative behaviour which may be detrimental to the children. In particular, it may worsen the relations between father and children. In addition, in a situation where only the mother works, she may be obliged to work and cannot take care of her children as she would like to. On the contrary, in a situation where she does not work, she may be frustrated. Parents at home, because they spend more time with their children, may also be more receptive to their children's behaviour and be more likely to report them as badly behaved.

Other results are important to note here. We observe that children of homeowners are less likely to be reported to be badly behaved by their mother. This result is consistent with the findings of Green and White (1997). Living with both natural parents (as opposed to coming from a broken family) actually increases the probability of being reported. This effect is the largest reported in this column; it increases the odds fifteen times. Step-parents might be less likely to report bad behaviour, a situation that could bring under-reporting from broken families. This result might also come from the fact that natural parents may be more stringent with their children, spend more time with them and expect more from them. This result is consistent with evidence which suggests that biological ties between parents and

children are important for the quality of child rearing (Case et al., 1999ab). As expected, a higher number of children living in the household has an unfavourable effect on the study child's behaviour. The results show that those who have a father who holds a professional or intermediate professional occupation are significantly less likely to be reported badly behaved by their parents. This could also show that children from more educated families are better behaved or that relationships between parents and children in more favoured families are improved. It is interesting to note that there might be an overlap between parental occupation and ambition. Controlling for occupation, parents who want their child to stay on at school are more likely to report them. Such parents might expect more and be stricter with their children and have a tendency to report them more. Finally, children going to a school maintained by Local Education Authorities seem to be less well behaved. This may be due to a less stringent discipline.

The second column of table 4.2a is concerned with reports (by the mother) of *extreme* bad behaviour. We can see that the parental labour market situation still has a statistically significant impact on the behaviour of the children. However, the big impact of having a father or male head unemployed has disappeared. Instead, the presence or absence of the mother in the home seems to have the most significant effect. The likelihood that a mother will report their child as being extremely badly behaved appears to be increased when the mother does not work; the odds are multiplied by around two. The two statistically significant coefficients are found not to be statistically different from each other, so that in the case where the mother does not work, the employment of the father does not make any difference to the likelihood of being reported. This result may be related to the fact that the mother will devote more time to her children. She will therefore be more likely to interact with them and to be more aware of their behaviour. Moreover, she might be more concerned by their

behaviour as it is her job. At the same time, it appears that the employment of the father (i.e. having a father at home or not) does not make much difference. The other results are similar to those in the first column, in particular, living in an intact family has the largest effect. The relation between *extreme* bad behaviour and the occupation of the father has the same pattern as in the first column, but all the coefficients are statistically significant. Namely, having a white-collar father decreases the probability of being reported while having no father or male head increases it.

The third column shows that the effect of the parental labour market situation on the probability of being in contact with a social agency is different from what has just been said. The children who are most likely to be referred to a social agency are those whose father did not suffer from unemployment and whose mother works. Indeed, the presence of the mother in the home reduces the likelihood of referral to an agency. The difference between the first and second coefficient is not statistically significant. The odds of being referred are decreased by about half when the mother does not work compared to a situation where both parents work. Most of the other coefficients have also opposite signs compared to the first two columns. The largest effect is that having parents who own their house increases the odds of being referred by more than three times. This result is difficult to interpret; it shows that the effect of having parents who are home-owners is not straightforward.

Overall, these results suggest that anti-social behaviour and referral measure slightly different types of issues. The relations between parents and children may deteriorate without the children being more likely to be referred for behaviour problems. We assume here that referral to an agency is an "objective" judgement compared with the "subjective" measure of bad behaviour.

The results of the random effects probit for boys are reported in table 4.2b. We find again that any situation compared to when both parents work is detrimental, but

the coefficient on the variable indicating that both parents are unemployed is not statistically significant. Compared to having both parents working, having an unemployed father increases the predicted probability of being reported for bad behaviour by 13 percentage points, while having a non-working mother increases this probability by only 6 percentage points. The former effect is larger that any labour market effect, and in particular it is much larger than having two non-working parents (which is not statistically significant). Financial difficulties are statistically significant and are associated with a 4-percentage-point higher probability of being reported badly behaved. The rest of the results are similar to what was found in the fixed effects logit; a larger number of children in the family, going to a school maintained by a Local Education Authority are both associated with a higher probability, while having a father in a white-collar (non-manual or professional) occupation or parents who are homeowners are "beneficial" to the child, although the latter two effects are not statistically significant. The main difference between the two specifications is that family structure becomes statistically insignificant.

For *extreme* bad behaviour (column 2), we observe similar results as in table 4.2a (as far as the direction of the correlation is concerned) and as just mentioned. The two main differences between the two tables are: financial difficulties change sign (so that their presence is associated with a 4-percentage-point higher probability of being reported) and become statistically significant, and family structure becomes statistically insignificant. Compared to a base child whose parents are working and have not had financial difficulties, having both parents unemployed increases the predicted probability of being reported by 8.2 percentage points, while having had financial difficulties increases only by 3.8 percentage points. Controlling for financial difficulties, unemployment is shown to have a large effect on *extreme* behaviour.

The last column of table 4.2b shows similar results to the last column of table 4.2a. Having both parents working is no longer the "best" situation, although this time having both parents unemployed is not statistically significantly better. Financial difficulties are statistically significantly associated with higher probability of referral to a social agency. It appears that the residual effect of unemployment (i.e. the effect not related to financial difficulties, for example the presence of either parent at home) is beneficial for the children. Contrary to what was found for bad behaviour and extreme bad behaviour, parental ambition and going to a school maintained by a Local Education Authority are associated with lower risk of referral and a larger number of children in the family is associated with higher risks.

The seven time-invariant variables give additional information; having a good score in math and settling quickly in class at 7 are statistically significantly associated with lower probability of facing any of the outcomes, while emotional maladjustment has the inverse effect. The latter variable has a large effect on all outcome (from around 8 to 15 percentage points change in predicted probabilities), and in particular on the probability of referral to a social agency. Having a mother younger than 20 at birth is associated with a higher probability of (general and *extreme*) bad behaviour, by around 5 to 7 percentage points. Having a good score in reading at 7 years old is associated with a lower probability of referral to an agency, by 14 percentage points. The latter is very large given that the average predicted probability of referral is equal to 0.16.

Before drawing conclusions from these results, we briefly turn to those for girls. Columns 1 and 2 in table 4.3a show that the results for girls are quite similar to what was found for boys. In particular, in the first column the results are exactly the same: any labour market situation is worse than having both parents employed and the odds ratios are similar to what was found for boys. In the second column, given a

situation where the mother does not work, having an unemployed father is statistically significantly worse. As for boys, financial difficulties do not have a statistically significant effect independently of unemployment. The absence of a father figure is detrimental to boys' behaviour but not to girls'. Having a father in a white-collar occupation is correlated with lower probability of *extreme* bad behaviour only. Finally, as for boys but to a lesser extent, homeownership is related to better behaviour, and living in publicly provided accommodation reduces the likelihood of *extreme* bad behaviour.

The last column shows that the parental labour market situation does not have a significant effect on the probability of girls' being referred to a social agency. As for boys, coming from a broken family appears to be associated with significant increases in the probability of referral, while a larger number of siblings and greater parental ambition are associated with a lower probability. As in the case of boys, girls with public tenant parents are more likely to be referred to an agency, but the effect of homeownership is not statistically significant.

In table 4.3b, columns 1 and 2 again show very similar results. Compared with the fixed effects model, the results on parental labour market are exactly the same. Two main differences can be noted compared to table 4.3a: financial difficulties are now statistically significant in the *extreme* bad behaviour case, and have a positive association with bad behaviour in both columns, and having no father or male head is now associated with a lower probability of *extreme* bad behaviour. Coming from an intact family does not appear to have additional statistically significant effects on *extreme* bad behaviour. Compared to a base child whose parents are working and have not had financial difficulties, having both parents unemployed increases the probability of being reported by around 13 percentage points.

The last column of table 4.3b shows very similar results to what was found in the fixed effects logit model, except financial difficulties are now statistically significant and a larger number of children is associated with higher probability of referral. Overall, all results for girls are similar to those for boys.

Out of the seven time-invariant variables, having a young mother at birth and emotional maladjustment increase the probabilities of general and *extreme* bad behaviour, respectively by 7 and 4 percentage points. A good score in reading decreases these by around 3-4 percentage points. All the time-invariant variables have a statistically significant and expected association with probability of referral to an agency (last column), except mother's age at birth and leaving school age, which are not statistically significant. The largest effect comes, as for boys, from emotional maladjustment (between 9- and 12-percentage-point change in the probabilities)

Overall, it appears that children who have either or both parents unemployed have a worsened relationship with them. On the contrary, boys whose mother does not work have a lower probability of being referred, while parental labour market situation does not affect girls. Children who have more ambitious parents and large families are found to be less well-behaved at home. Children who have a white-collar father or whose parents are homeowners are better behaved. It is more difficult to interpret the role of these social factors in determining the probability of referral to a social agency. We see however that children from broken or single-parent families are more likely to be referred and that parental ambition is beneficial, decreasing this probability. Children who have more educated parents have better outcomes than others. In addition, early factors, which we observe at seven years old, have ramifications for later outcomes. In particular, children who demonstrate higher ability and who tend to be more adaptable at a young age have better outcomes.

The next section provides additional insight into the role of parental factors.

4.4.2 Investigation using cross-section data

4.4.2.1 Specification[34]

The idea is to investigate whether the child's past behaviour and experiences have an effect on outcomes at age sixteen. The outcomes are the following: whether the child has been in contact with the police (due to unlawful activity), whether the child has been referred to a social agency (defined as previously) and whether the child behaves "badly". The latter outcome is measured through two variables each differing somewhat from the measure used in the previous section: bad behaviour observed at and reported by the school, and bad behaviour observed at home (and reported by the mother). The latter measure considers that the child has a bad behaviour if he or she presents any of the following behaviours: irritable, fighting with others, destructive with his own and others' belongings, disobedient, lying, bullying other children. Bad behaviour noticed at school includes the same behaviours plus the following ones: truant from school, stealing, and resentful or aggressive when corrected.

The fact of being in contact with the police is due to the combination of two events: first the child decides to offend, second he gets caught. We assume that the more serious is the offence, the more likely is the child to be caught. Consequently, the probability that a child is in contact with the police at sixteen is thought to depend on three groups of factors: personal characteristics and behaviour, external environment (including social interactions as well as police force), and family economic and social background. We should note here that this measure of contact with the police is obtained from reports of the parents and the school; the data may therefore suffer from under-reporting.

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[34] In all the following specifications, certain statistically insignificant variables have been dropped to improve the econometric model. Moreover, no satisfactory model was found to explain extreme anti-

We consider that being referred to an agency and exhibiting bad behaviour are affected by the same groups of factors. The explanatory variables of particular interest are the labour market and financial situations of the parents. We choose to introduce the recurrence of father or male head unemployment as four dummies indicating the number of times unemployment was reported in the interviews, from no unemployment to repeated spells of unemployment. In order to increase the number of observations, we also include missing responses in our measures of financial difficulties and unemployment. Details are provided in appendix. Although the data set contains actual parental income when the child is 16, we prefer to use repeated financial difficulties. It has been shown that longer-term measure of income are more relevant in such specifications than income in one given year (Mayer, 1997). This is because, a low income in one year may be temporary and have no significant effects on the family, while persistent financial difficulties are more likely to affect family members' life. Employment of the mother is considered to have a different effect depending on when it occurs, and on the marital status of the mother. We therefore have dummies for each situation and at each of the three interviews (unless otherwise stated).

The personal characteristics of the child include measures of ability through test scores at 7 and reports of the school on children's general knowledge at 7 and 11. We control for whether the children have been in care; this catches the (social) effects of family disruption as well as a peer group effect, which is expected to lead to a higher probability of a bad outcome. The family background variables capture any influences which could affect the children's behaviour, such as the interest the parents have in their success, which is expected to be beneficial; the number of children in the family, which is expected to be detrimental. The structure of the family is also

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social behaviour of girls.

expected to have an effect, in particular family disruption is expected to be disadvantageous. We include housing tenure for the same reason as before, as well as an indicator of the number of times the family moved since the child's birth. Numerous house moves are expected to bring instability in the child's life and this may affect them in a negative way. We consider that parental characteristics, such as leaving school age or age of the mother at birth, should also be included in these specifications. They might be indicative of a specific way of raising children and of passing certain values on. We are able to control for various school characteristics such as the number of pupils expelled in a year and the teachers/pupils ratio. Region dummies are again included to control for local circumstances - for example, the size or financial means of the police force.

The results presented pass all the tests for functional form, normality and heteroscedasticity (the tests statistics are reported in the last rows of the tables). Variables which are omitted (such as child's health variables, or father's social class) were not found to be statistically significant. The models were improved by not including them.

Tables 4.4a and 4.4b show cross-tabulations for the economic factors of interest here (for boys and girls respectively). We can see that the results concerning unemployment and financial difficulties are consistent with what we expected. The proportion of boys who have anti-social behaviour or who have been in contact with the authorities is, in all cases except one, significantly greater among children from disadvantaged families. For example, 32.5 percent of boys having an unemployed or sick father (35.6 percent of those in families reporting unemployment difficulties) are in contact with the police at sixteen, while only 15.6 percent of the others are in contact with the police. As far as girls are concerned, we can see from table 4.4b that a significantly higher proportion of those who have bad behaviour or faced the

authorities comes from families with unemployment and financial difficulties. For girls, the presence of a male head or the fact of having a working mother do not seem to be significantly related to being in contact with the police at sixteen, and having a working mother is not significantly related to bad social behaviour reported by the parents or the school.

We can also note that significantly fewer girls than boys are in contact with the police at sixteen, regardless of the type of family they come from: in the whole sample, only 5.7 percent of the girls were in contact with the police at sixteen, whereas 16.7 percent of the boys were. In the whole sample, which is considered to be representative of the population, we also found that a significantly smaller proportion of girls had been referred to an agency (9.5 percent versus 14.9 percent for boys). The proportion of girls reported (to be badly behaved) by the school was 33.8 percent compared to 40.8 percent for boys, and those reported by their parents represented 52.3 percent compared to 50.2 percent for boys. The proportions of boys and girls reported to have an *extreme* bad behaviour were not significantly different (they lie around 8 percent).

4.4.2.2 Economic factors

Tables 4.5(a and b) and 4.6(a and b) show the results obtained for the probit models for boys and girls respectively. The first two columns of table 4.5a show that unemployment of the father as well as its recurrence do not have statistically significant effects on parental reports of bad behaviour or *extreme* bad behaviour. Moreover, the marginal effects are close to zero. As far as the employment and marital status of the mother is concerned, it is important to note that only the coefficients on having, at 11, a non-working mother living in couple in the first column and on having, at 11, a lone non-working mother in the third column are

statistically significant. These variables are associated with a lower probability of being reported. Financial difficulties appear somewhat more relevant in explaining reports of bad behaviour, and in particular we observe an incremental effect when such difficulties are recurrently observed during childhood; the marginal effects are typically bigger as the number of times financial difficulties are observed increases. We have to keep in mind that the reports of bad behaviour are probably not wholly a representation of the behaviour of the child, but partly an indication of the relation between the parents and the child.

The last column offers a more objective, although perhaps not free of bias, view on the child: behaviour reported by the school. Here, the labour market situation of the parents seems slightly more significantly correlated with the social behaviour of the child. We see that when unemployment is observed in the family, the probability that the children exhibit bad behaviour at school increases. Children whose father has had some experience of unemployment are 12 percentage points more likely to be reported. However, this effect does not statistically significantly increase as unemployment is observed more often. Again, only one coefficient among the mother's employment and marital status variables (on having a non-working mother in couple at 7 years old) is statistically significant. It shows that having a non-working mother at a young age is beneficial compared to have both parents living in couple and working. The presence of financial difficulties as opposed to no difficulties is associated with a significant and quite big increase in the probability of bad behaviour (an increase of 8 percentage points), but additional reports of financial difficulties are not associated with a further increase in probability.

The first column of table 4.5b shows the results concerning an even more objective measure of bad behaviour: whether the child has been in contact with the

police.[35] We find that father's unemployment does have a statistically significant relationship with being in contact with the police. Recurrent unemployment of the father, in particular when observed twice or more across the three sweeps, seems to be associated with a higher probability that the children are in contact with the police. This is contrary to Gregg and Machin's (2000) findings: they did not find any statistically significant effect from father's unemployment on contacts with the police. As we expected, we find that recurrent unemployment is more relevant when looking at the consequences for children, Gregg and Machin did not catch this effect because they were using unemployment at given points in time. Turning to the status of the mother, we observe that having a non-working mother when young (i.e. 7 years old) is statistically significantly associated with lower probability of being in contact with the police when the mother lives in couple. The presence of financial difficulties has an insignificant effect. The coefficient has however the expected positive sign and size (around 3 percentage points), as found by Gregg and Machin (2000), although they found it to be statistically significant.

Finally, the last column of table 4.5b reports results concerning the probability of being in contact with a social agency. We can see that recurrent spells of father's unemployment do have the expected effect: recurrent unemployment appears to be associated with higher probability of such contacts. In particular, children who have a father unemployed twice or more across the sweeps have a probability higher by 13 percentage points compared to those whose father was never unemployed. As in the previous columns, having a non-working mother in couple when young (i.e. 7 years old) is statistically significantly associated with lower probability of referral. In addition, it appears that the detrimental effect of having a lone mother at 16 years old

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[35] Although this measure may still suffer from report bias since it is based on parents and school's reports.

is significant. Finally, only when financial difficulties are observed often during childhood do we find a significantly higher probability (a change of around 10 percentage points when they are observed repeatedly).

Turning to the results for girls in table 4.6a, we can see from the first column that, as for boys, the labour market situation of the father does not have a statistically significant effect on the probability of parental reports of bad behaviour. The marginal effects are however bigger than in the boys' case (up to 12 percentage points for repeated unemployment). As for boys, only the coefficient on having a non-working mother living in couple at 11 years old is statistically significant and negative. The correlation between financial difficulties and these reports is strongly statistically significant and has the expected positive sign. The probability of being reported badly behaved increases as financial difficulties are more frequently suffered by the family. Girls who come from a family who repeatedly suffered from financial difficulties are more than 12 percentage points more likely to be reported for bad behaviour.

The last column shows that children who have a father unemployed have a higher probability of being reported by the school. Moreover, there is an increasing effect of repeated unemployment. Girls whose father was repeatedly unemployed have a 20-percentage-point higher probability of being reported by the school. Financial difficulties have a similar effect. Repeated financial difficulties with an 11-percentage-point increase in the probability. Mother's status appears to have the same effect as mentioned in relation to the previous column, in addition having a lone working mother at 11 and a working mother living in couple at 16 are associated with a lower probability that girls are reported by the school.

Given the small percentage of girls having been in contact with the police, it is important to treat the results in column (1) of table 4.6b with caution. Unemployment of the father has a statistically significant effect, raising the probability of being in

contact with the police by 2 percentage points. Repeated spells are not statistically significant, but have the expected positive sign. Financial difficulties have the expected sign but their coefficients are close to zero and they are not statistically significant. Mother's status is measured in a slightly different way here because some categories were empty of observations. It appears that 11-year-old girls who have a mother who works have a greater probability of being in contact with the police when they are 16.

Finally, we report results concerning girls' referral to a social agency in the last column of table 4.6b. Having an unemployed father increases the probability of being in contact with any social agency (by about 3 percentage points), but the incremental effect of repeated unemployment does not appear statistically significant here. Financial difficulties have the expected (statistically significant) effect, increasing with the number of times they are observed (some financial difficulties increase the probability by 3 percentage points and repeated financial difficulties by 9 percentage points). Mother's status does not appear to be statistically significant. Only living with a lone working mother at 11 years old appears to have a statistically significant and beneficial effect, decreasing the probability by 4 percentage points.

To summarise, spells and especially repeated spells of unemployment are associated with a higher probability that almost any bad outcome (except reports by the parents) subsequently occurs. Looking only at statistically significant effects for boys, having a non-working mother in couple at 7 appears to be associated with lower probability that any bad outcome (except reports by the parents) subsequently occurs and having a lone mother at 16 appears to be associated with a greater likelihood to be referred to a social agency. For girls, having a non-working mother in couple at 11 is associated with a lower probability of being reported by the parents or school, while having a lone working mother at 11 decreases the probability of being reported by the

school and being referred. Contacts with the police are more likely for girls whose mother was working when they were 11. Overall, taking all the coefficients (including those statistically insignificant) into account, there is evidence that when having both parents living together, having a non-working mother at 7 or 11 is beneficial for boys. The effect of having a lone mother is varied depending on whether the mother works and the age of the child, but is definitely detrimental for boys when it occurs when they are 16 years old. For girls, having a working mother at 11 years old is detrimental, unless the mother is a single parent. There is also some evidence that 16-year-old girls who have a non-working mother living in couple are better off.

4.4.2.3 Social factors

From tables 4.5a and 4.5b we can also review the main social factors that are relevant (in other words statistically significant) in explaining children's outcomes at sixteen. We consistently find that a larger number of children in the family is associated with a higher probability of bad behaviour and/or contact with the authorities (with a change of about 2 to 3 percentage points in the predicted probabilities). Current (i.e. when the child is sixteen) parental ambition with respect to their child's schooling is associated with a lower probability that the bad outcomes occur. The largest effect is a 17-percentage-point decrease in the probability that the child is reported by the school. However, previous ambition (i.e. when the child is 7 or 11) does not seem to have such an effect, as the significance and the signs of the coefficients seem to vary according to the specification. Some effects are consistent across only some types of bad outcome. For example, the fact that the mother left school after the compulsory age seems negatively associated only with bad behaviour reported by the parents and being in contact with social services. Having been in care is significantly positively correlated with being in contact with the police or a social

agency and with having an extremely bad behaviour (with changes in predicted probabilities of between 12 and 16 percentage points). Having parents who repeatedly take the initiative to meet the teachers is negatively associated with the former two outcomes (with changes in probabilities of the order of 5 percentage points). Boys who have a mother younger than 20 at birth have an 8-percentage-points-higher probability of being reported by the school, a 2-percentage-points-higher probability of being extremely badly behaved, a 6-percentage-points-higher probability of being in contact with the police and a 4-percentage-points-higher probability of being in contact with a social agency. Children who are reported to be of above average general ability have generally a lower probability of having any of the negative outcomes considered here (a change in predicted probability of 4 to 11 percentages points). Children who have received help at school when they were 11 years old are more likely to be reported to have an extremely bad behaviour, a bad behaviour at school or to have contacts with social agencies.

As far as girls are concerned, the results are only slightly different (tables 4.6a and 4.6b). The probability of being in contact with the police proved hard to explain, and the model is quite parsimonious. We find that a larger number of children in the family is associated with a higher probability of any outcome occurring in particular reports of anti-social behaviour by the parents (except contacts with the police). Current parental ambition with respect to their child's schooling is associated with a lower probability that the bad outcomes occur. The largest effect is an 11-percentage-point decrease in the probability that the child is reported by the school. However, previous ambition does not have a statistically significant effect, although it is mainly associated with a lower probability of a bad outcome occurring. Contrary to what was found for boys, the fact that the mother left school after the compulsory age, and having been in care are never statistically significant. Having parents who repeatedly

take the initiative to meet the teachers is negatively associated with the probability of being reported by the school (with a change in probability of 7 percentage points). Having a mother younger than 20 at birth does not have a statistically significant effect. Girls who are reported to be of above average general ability have generally a lower probability of having any of the negative outcomes considered here, although these coefficients are not statistically significant. Children who have received help at school when they were 11 years old are more likely to be reported to have a bad behaviour at school or to have contacts with social agencies.

It is interesting to complete the analysis by studying the extent to which parental interest in the progress of their children can offset the negative effects of father's unemployment and of living in a non-intact family. Predicted probabilities are reported in tables 4.7a and 4.7b for boys and girls respectively. The results show that parental interest can successfully and significantly offset the negative effects that we have seen so far. For example, by calculating average predicted probabilities, we can see that a base boy whose father never experienced unemployment and whose parents never supported or took initiative to meet the teachers has a 19 percent probability of having been in contact with the police at 16. This probability is increased by about 12 percentage points for a boy whose father had repeated spells of unemployment, if we now set this child to have parents who always wanted him to stay on at school, the probability is then reduced by about 8 percentage points, if we further suppose that the parents of this child took the initiative to meet the teachers twice, the probability is further reduced by around 7 points. In the same way, compared to boys who come from a non-intact family (with parents figures who never had ambition and never took the initiative to go and see the teachers), those whose parents show ambition during the whole childhood have a 8-point-lower predicted probability of having been in contact with the police at 16, the probability is decreased by a further 6 points for

those whose parents took repeatedly the initiative to see the teachers. If we now look at what happens when the mother works when the child is young (7 and 11), we see that the predicted probabilities are higher than when the mother does not work (whether the parents are interested in their child's achievements or not). Parental interest in their child does decrease the probabilities. The same pattern is repeated for the other outcomes and for girls.

4.4.2.4 The effect of adding Local Authority variables

Although we consider that the regional dummies capture the effects of the environment on the children's outcomes, one might argue that they are too aggregated. Children may indeed be influenced by the particular environment in their locality as well. It is interesting to see whether the relationship between the family economic situation and children's outcome is affected by the inclusion of these variables. We consider five variables of interest:[36] the unemployment and sick rate, the proportion of council tenants, of new Commonwealth immigrants, of non-manuals, of married women working, and the number of persons per room. They are introduced as a dummy equal to one if the proportion is higher than the average across all the Local Authorities and to zero if the proportion is below the average. For most of the variables, the value of one is indicative of a less favoured Local Authority, except for the proportion of non-manuals and of married women working which should be associated with richer areas.[37]

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[36] We found meaningful Local Authority variables only for the specifications with bad behaviour as a dependent variable. For example, we would need information on police force in the Local Authority for the "contacts with the police" variable, or information on the degree to which social agencies are active in the Local Authority for the "contacts with agencies" variable. Other peer group effects are already captured by the school variables.

[37] The data are part of the NCDS data set. They were calculated from the 1971 Census.

The findings are reported in tables 4.8 and 4.9 for boys and girls respectively. Few Local Authority variables are statistically significant; surprisingly an above average proportion of non-manuals is associated with higher probability that the boys are reported badly behaved at school. A higher than average proportion of new immigrants is associated with a higher probability that the girls are reported badly behaved at school.

The results concerning the family economic situation do not contradict what was found before, although they are affected by the inclusion of the Local Authority variables. Repeated spells of unemployment are associated with a 23- and 26-percentage-point higher probability that girls are reported by the parents and the school respectively. Boys whose father experienced some unemployment are more likely to be reported by their parents by 11 percentage points. For boys, having a non-working mother at 11 decreases the probability of being reported by their parents at 16, unless their mother is a single parent. We find the same for girls for both outcomes, but the coefficient on lone working mother is not statistically significant. Looking at the last two columns of table 4.9, we used slightly different categories (because of lack of observations), we lose information with this specification, but it appears that 16-year-old girls are less likely to be reported badly behaved at school if their mother does not work. Finally, financial difficulties seem overall to be associated with higher probabilities of bad outcomes, although additional financial difficulties do not have further effects, and although the coefficients are not statistically significant in the first column of table 4.8.

Overall, it appears that the inclusion of Local Authority variables has some effect on the size and significance of our variables of interest, but our main conclusions remain. The relationships between the Local Authority variables and the economic situation of the parents is likely to be very complex, and our specification

as well as the data available do not enable us to disentangle these. In addition, the family economic situation variables appear to be statistically significant, while the Local Authority variables are not. For these reasons, we consider that the specifications used in tables 4.5a to 4.6b are sufficient to expose the effect of family background on children's outcomes. It is not absolutely clear here whether the local environment influences the children, or whether the family's characteristics are strongly correlated with the local environment and ultimately determine the children's outcomes. From our results, we would however favour the latter idea.

4.5 Conclusion

This chapter has been interested in determining the factors associated with the probability that children have an anti-social behaviour. First, our results show that having an unemployed father is associated with detrimental outcomes. Because we control for the presence of financial difficulties, we consider that these unemployment effects are additional to the impact of the financial difficulties that may be associated with unemployment. The result that repeated periods of unemployment have additional effects conforms to the idea that there may be a cumulative unemployment effect. Second, we find some evidence consistent with the idea that having a mother employed early in life may be damaging. These results are detailed as follows.

The panel data results concerning the parental reports of anti-social behaviour show that the relations between parents and children deteriorate in any situation compared to when both parents work. This is consistent with the idea that unemployment may affect the relationship between the parents and the children. Moreover, for those whose mother does not work, the unemployment of the father does not make a difference. In cross-sections, 11-year-old boys and girls who have a

mother who does not work and lives in a couple are less likely to be reported at 16, by 7 and 5 percentage points respectively.

The presence of past spells of father's unemployment increases the probability that the boys and girls are reported to be badly behaved at school at 16, respectively by 12 and 10 percentage points. For girls, repeated spells of unemployment (as measured here) are associated with further increases in this probability, by about 20 percentage points. 7-year-old boys and 11- and 16-year-old girls who have a mother who does not work and lives in couple are less likely to be reported at 16.

Boys whose father suffered from unemployment repeatedly are more likely to be in contact with the police, by 10 percentage points. This is also the case for girls whose father experienced some unemployment (the change in probability is only of 2 percentage points), but repeated spells of father's unemployment do not have additional effects. 7-year-old boys whose mother does not work and lives in couple are less likely to have had contacts with the police at 16, while 11-year-old girls who have a working mother are more likely to have at 16.

From the panel data analysis, parental unemployment does not increase the probability of referral to a social agency. On the contrary, boys who have their mother at home are less likely to be referred. From the cross-section analysis, father's unemployment is associated with a higher probability of future referral, repeated spells have an additional effect for boys only. This may show that spells of father's unemployment have effects in the longer term. It seems that in a two-adult household, having a mother who works is somewhat associated to a higher probability of referral at 16 years old, especially if this occurs when the child is younger.

The marital and labour market status of the mother appears to have a complex relationship with children's outcomes. Overall, the results seem to indicate that those who, at a young age, had a non-working mother living in couple are better off

compared to others. These results are consistent with the idea that mother's employment is associated with detrimental outcomes. With our data, it was not possible to point out the reasons for this association. We lack information such as the detailed timing of maternal employment, the number of hours worked, or child care arrangements.

There is some evidence that having no father or male head at 16 years old is detrimental in particular for boys, being associated with a higher probability of occurrence of most bad outcomes. For girls, it appears that living with a lone working mother at 11 is somewhat beneficial. This is consistent with findings that pre-adolescent girls have close relationship with their mother (Hetherington at al, 1998).

Other notable results show that characteristics at birth (such as the age of the mother) and at a young age (such as sociability as measured by the time children take to settle in class) are indicative of later outcomes in life. This could be worrying, but it also appears that parental inputs, such as their ambition for their children or their interest shown through them visiting the teachers, are overall associated with improved outcomes. This is true although we find some evidence in the panel data analysis that parental ambition can have a perverse effect on parents-child relationships. The school variables, such as the teacher-pupils ratio or the number of expelled pupils do not seem to be statistically significant in influencing children's outcomes. We can tentatively infer that it would be more appropriate to try to improve children's outcomes through their parents rather than at school. Such measures as meeting with the parents and making them aware of what they need to do to help (such as parenting classes) and support their children could be particularly beneficial.

Family structure also appears to matter. In particular single parent and broken families seem to be associated with worse outcomes. This is particularly worrying since government intervention is not meant to dictate people's way of living. Again,

our results suggest that giving incentives and help to parents to support their children (or step-children) could be a way of alleviating these negative effects.

The environment in which the children live is also a factor in their outcomes. No precise conclusions can be drawn here because of data availability and this was not the main focus of this chapter. We find evidence consistent with the idea that children in less favoured areas have worse outcomes.

Table 4.1a: Proportion of boys facing problems at 16, by past family difficulties (%)

	Antisocial behaviour at 16 (reported by parents)	Extreme antisocial behaviour at 16 (reported by parents)	Antisocial behaviour at 16 (reported by school)	Referred at 16
Unemployment difficulties (at 7)	***70.8***	***28.6***	***69.6***	***38.8***
No unemployment difficulties	***50.1***	***7.2***	***39.2***	***14***
Unemployment difficulties (at	***60.9***	***16.3***	***65.4***	***28.7***
No unemployment difficulties	***50.3***	***7.9***	***38.2***	***13.3***
Financial difficulties (at 7)	***66.7***	***21.5***	***64.2***	***34***
No financial difficulties (at 7)	***49.5***	***6.8***	***38.4***	***13.4***
Financial difficulties (at 11)	***66.1***	***18.4***	***59***	***29.6***
No financial difficulties (at 11)	***48.7***	***6.9***	***37.7***	***12.8***
Male head unemployed or sick	***64.6***	***23.6***	***73.7***	***37.4***
Male head not unemployed nor	***50.4***	***7.4***	***39.2***	***14.2***
Male head unemployed or sick	***64.6***	***23.6***	***64.8***	***35.1***
Male head not unemployed nor	***50***	***7.6***	***39***	***14***
Mother works when child is 7	***52.6***	7.8	***44.5***	***16.9***
Mother does not work when	***48.6***	7.8	***35.9***	***12.6***
Mother works when child is 11	***52.2***	8	**41.1**	14.8
Mother does not work when	***47.8***	8.2	**37.6**	14.5

Table 4.1b: Proportion of girls facing problems at 16, by past family difficulties (%)

	Antisocial behaviour at 16 (reported by parents)	Extreme antisocial behaviour at 16 (reported by parents)	Antisocial behaviour at 16 (reported by school)	Referred at 16
Unemployment difficulties (at 7)	***67.9***	***20.1***	***61***	***28.8***
No unemployment difficulties (at 7)	***51.8***	***7.4***	***32.3***	***8.9***
Unemployment difficulties (at 11)	***70.1***	***18.2***	***56.9***	***19.8***
No unemployment difficulties (at 11)	***50.8***	***6.9***	***31.5***	***8.4***
Financial difficulties (at 7)	***63.6***	***15.3***	***56.9***	***24.6***
No financial difficulties (at 7)	***51.4***	***7.3***	***31.4***	***8.3***
Financial difficulties (at 11)	***65.4***	***18.7***	***52.9***	***21.1***
No financial difficulties (at 11)	***50.2***	***6.2***	***31***	***7.9***
Male head unemployed or sick (at 7)	**63.5**	**14.4**	***58.7***	***25.7***
Male head not unemployed nor sick	**52**	**7.7**	***32.5***	***9.1***
Male head unemployed or sick (at	***67.8***	***18.1***	***58.2***	***24***
Male head not unemployed nor sick	***51.5***	***7.2***	***32.8***	***9***
Mother works when child is 7	***54.5***	**8.8**	***37.4***	**10.3**
Mother does not work when child is	***50.5***	**6.9**	***28.7***	**8.6**
Mother works when child is 11	***53.4***	7.5	***35.2***	9.2
Mother does not work when child is	***49.2***	7.6	***30.4***	10

Note to tables 4.1a and 4.1b:

(1) Pearson χ^2 statistical tests were carried out to check the significance of the relationships. Numbers in bold and italics indicate that the relationship is significant at the 1% level, numbers in bold only indicate that it is significant at the 5% level, while underlined numbers indicate that it is significant at the 10% level.

Table 4.2a: Conditional logit estimations for boys.

	Bad behaviour		Extreme bad behaviour		Referred to a social agency	
	Coeff.	Odds ratio	Coeff.	Odds ratio	Coeff.	Odds ratio
Parental labour market situation						
No father unemployment + mother works	Base					
No father unemployment + mother does not work	0.633**	1.884	0.674**	1.961	-0.225**	0.798
	(0.074)		(0.066)		(0.113)	
Father unemployment + mother works	1.039**	2.826	0.121	1.129	-0.418	0.658
	(0.301)		(0.208)		(0.296)	
Father unemployment + mother does not work	0.736**	2.087	0.562**	1.754	-0.658**	0.518
	(0.291)		(0.221)		(0.279)	
Family has financial difficulties	0.115	1.122	-0.025	0.976	0.206	1.228
	(0.144)		(0.111)		(0.158)	
Father's occupation						
Manual father or male head	Base					
Non-manual father or male head	-0.101	0.904	-0.292**	0.746	-0.00006	1.000
	(0.143)		(0.127)		(0.211)	
Professional (intermediate group) father or male head	-0.504**	0.604	-0.673**	0.510	0.012	1.013
	(0.131)		(0.118)		(0.204)	
No father or male head	0.311	1.365	0.667**	1.948	0.524	1.689
	(0.374)		(0.299)		(0.434)	
Family structure						
No natural parents	Base					
One natural parent	0.728	2.070	1.255	3.507	0.181	1.198
	(1.211)		(1.141)		(1.028)	
Both natural parents	2.724**	15.247	3.576**	35.731	-1.870*	0.154
	(1.181)		(1.122)		(0.959)	
Number of children	0.503**	1.654	0.365**	1.441	-0.329**	0.719
	(0.043)		(0.037)		(0.058)	
Parents' housing tenure						
Parents have accommodation tied to occupation or other situation	Base					
Parents are public tenants	-0.104	0.901	-0.600**	0.549	1.000**	2.718
	(0.214)		(0.184)		(0.342)	
Parents are private tenants	0.331	1.393	0.275	1.317	0.435	1.545
	(0.222)		(0.195)		(0.353)	
Parents are owners or buying	-0.949**	0.387	-1.216**	0.296	1.292**	3.638
	(0.215)		(0.191)		(0.360)	
Parents' ambition						
Have ambition	1.034**	2.812	1.076**	2.934	-1.016**	0.362
	(0.080)		(0.070)		(0.110)	
School						
School is maintained by a Local Education Authority	1.140**	3.127	0.928**	2.530	-0.031	0.970
	(0.209)		(0.196)		(0.360)	
Region						
Scotland	Base					
North western	-0.385	0.681	-0.424	0.655	0.392	1.479
	(0.696)		(0.635)		(2.258)	
Northern	0.055	1.056	-0.200	0.819	-0.332	0.717
	(0.705)		(0.554)		(2.077)	
East and west Riding	1.033	2.809	0.143	1.154	0.080	1.084
	(0.723)		(0.627)		(2.152)	
North Midlands	0.653	1.920	-0.057	0.945	-0.496	0.609
	(0.705)		(0.610)		(1.702)	
Eastern	-0.262	0.769	-0.496	0.609	0.413	1.512
	(0.654)		(0.586)		(1.779)	
London and South eastern	-0.448	0.639	-0.197	0.821	0.044	1.045
	(0.625)		(0.594)		(1.770)	
Southern	-1.283*	0.277	-1.607**	0.200	0.928	2.530
	(0.689)		(0.632)		(1.865)	
South West	-1.517**	0.219	-1.182*	0.307	-0.050	0.951
	(0.704)		(0.635)		(1.845)	
Midlands	-0.128	0.880	-0.804	0.448	-0.874	0.417
	(0.695)		(0.647)		(1.730)	
Wales	-0.279	0.756	0.064	1.066	0.435	1.545
	(0.833)		(0.889)		(1.982)	
Pseudo R-squared	0.1630		0.1569		0.1537	
Observations	6547		8498		2799	

Notes to tables 4.2a (and 4.3a):
(1) Standard errors in parentheses.
(2) The models are estimated using unbalanced panels which count a maximum of three observations per individual.
(3) "Bad" social behaviour (in each sweep) is equal to 1 if the child is found to have shown (often and/or sometimes) any of the following behaviours: irritable, fighting with others, destructive with his own and others' belongings, disobedient. It is equal to 0 if the child never shows any of these characteristics. "Extremely bad" social behaviour is equal to 1 if the child is found to have (often and/or sometimes) shown **at least half** of the behaviours just mentioned. It is equal to 0 otherwise.

Table 4.2b: Random effects probit for boys.

	Bad behaviour		Extreme bad behaviour		Referred to a social agency	
	Coeff.	M.E.	Coeff.	M.E.	Coeff.	M.E.
Parental labour market situation						
No father unemployment + mother works						
No father unemployment + mother does not work	0.194**	5.878	0.191**	7.060	-0.148**	-3.033
	(0.030)		(0.028)		(0.041)	
Father unemployment + mother works	0.497**	13.459	0.079	2.867	-0.330**	-6.236
	(0.155)		(0.114)		(0.149)	
Father unemployment + mother does not work	0.138	4.253	0.223**	8.266	-0.064	-1.364
	(0.131)		(0.106)		(0.131)	
Family has financial difficulties	0.151**	4.418	0.105**	4.000	0.319**	7.452
	(0.062)		(0.052)		(0.069)	
Father's occupation						
Manual father or male head						
Non-manual father or male head	-0.099	-3.042	-0.081*	-2.972	-0.204**	-3.954
	(0.047)		(0.043)		(0.068)	
Professional (intermediate group) father or male head	-0.120	-3.705	-0.183**	-6.633	-0.084	-1.732
	(0.042)		(0.040)		(0.063)	
No father or male head	-0.159	-4.967	0.033	1.239	0.592**	15.808
	(0.117)		(0.111)		(0.153)	
Family structure						
Child does not live with natural parents						
Child lives with one natural parent	-0.197	-6.005	-0.175	-6.223	-0.417**	-12.253
	(0.143)		(0.129)		(0.172)	
Child lives with both natural parents	-0.088	-2.594	0.013	0.468	-0.718**	-19.209
	(0.124)		(0.110)		(0.142)	
Number of children	0.107**	3.257	0.086**	3.150	0.031**	1.771
	(0.011)		(0.009)		(0.013)	
Parents' housing tenure						
Accommodation tied to occupation or other situation						
Public tenants	0.118*	3.546	-0.055	-2.051	0.070	1.368
	(0.070)		(0.063)		(0.093)	
Private tenants	0.238**	6.835	0.131*	5.003	0.081	1.592
	(0.084)		(0.075)		(0.108)	
Owners or buying	-0.083	-2.656	-0.199**	7.326	0.135	2.703
	(0.069)		(0.063)		(0.094)	
Parents' ambition						
Have ambition	0.315**	9.987	0.329**	12.300	-0.738**	-18.708
	(0.034)		(0.032)		(0.045)	
School						
School is maintained by a Local Authority	0.256**	8.337	0.186**	6.900	-0.074	-1.583
	(0.077)		(0.077)		(0.131)	
Region						
Scotland						
North western	0.102*	3.284	0.163**	5.794	-0.201**	-4.243
	(0.062)		(0.056)		(0.082)	
Northern	0.187**	5.882	0.193**	6.896	-0.177**	-3.791
	(0.066)		(0.059)		(0.087)	

Table 4.2b (ctd.)

East and west Riding	0.143**	4.569	0.202**	7.219	-0.054	-1.208
	(0.068)		(0.061)		(0.088)	
North Midlands	0.248**	7.676	0.216**	7.722	-0.144	-3.125
	(0.069)		(0.062)		(0.090)	
Eastern	0.247**	7.640	0.198**	7.070	-0.173**	-3.708
	(0.065)		(0.059)		(0.087)	
London and South eastern	0.166**	5.267	0.233**	8.367	-0.231**	-4.814
	(0.059)		(0.053)		(0.079)	
Southern	0.177**	5.578	0.194**	6.923	-0.158	-3.413
	(0.073)		(0.066)		(0.098)	
South West	0.101	3.250	0.186**	6.632	-0.081	-1.792
	(0.072)		(0.066)		(0.095)	
Midlands	0.188**	5.911	0.198**	7.074	-0.178**	-3.798
	(0.063)		(0.057)		(0.083)	
Wales	0.178**	5.628	0.190**	6.760	0.095	2.270
	(0.075)		(0.068)		(0.097)	
Time-invariant characteristics						
Teenage mother	0.181**	5.271	0.189**	7.200	0.016	0.328
	(0.054)		(0.046)		(0.065)	
Mother left school at 16 or older	-0.076*	-2.361	-0.020	-0.700	-0.067	-1.366
	(0.042)		(0.038)		(0.061)	
Father left school at 16 or older	-0.029	-0.890	-0.014	-0.520	-0.028	-0.584
	(0.045)		(0.041)		(0.066)	
Above average score (reading)	-0.119	-3.482	-0.015	-0.560	-0.552**	-14.141
	(0.091)		(0.076)		(0.095)	
Above average score (math)	-0.110**	-3.250	-0.084**	-3.203	-0.288**	-6.558
	(0.046)		(0.040)		(0.054)	
Quick to settle in class	-0.079**	-2.376	-0.134**	-5.133	-0.256**	-5.557
	(0.033)		(0.029)		(0.042)	
Emotional maladjustment	0.239**	6.762	0.254**	9.749	0.575**	14.704
	(0.070)		(0.059)		(0.079)	
Constant	0.023		-0.937**		1.170**	
	(0.190)		(0.173)		(0.241)	
Rho (cross-period correlation)	0.141		0.090		0.157	
	(0.021)		(0.019)		(0.033)	
LR test, rho = 0 ($\chi^2(1)$)	50.08		24.43		22.60	
Pseudo R-squared	0.037		0.033		0.117	
Predicted probability	0.748		0.384		0.160	
Observations	11282		11282		8122	

Note: M.E are marginal effects; they are calculated as the difference between the average predicted probability when the dummy is equal to 1 and the average predicted probability when it is is equal to 0. For categorical dummies, the other categories are set to 0. For continuous variables (number of children) the marginal effect is the average of the Standard Normal densities of the predicted values multiplied by the coefficient of the variable (see Arulampalam, 1999 and Arulampalam et al., 2000).

Table 4.3a: Conditional logit estimations for girls

	Bad behaviour		Extreme bad behaviour		Referred to a social agency	
	Coeff.	Odds ratio	Coeff.	Odds ratio	Coeff.	Odds ratio
Parental labour market situation						
No father unemployment + mother works	Base					
No father unemployment + mother does not work	0.420**	1.523	0.699**	2.011	0.062	1.064
	(0.072)		(0.073)		(0.139)	
Father unemployment + mother works	0.645**	1.907	0.186	1.205	-0.466	0.628
	(0.290)		(0.221)		(0.323)	
Father unemployment + mother does not work	0.932**	2.540	0.347	1.415	-0.303	0.738
	(0.301)		(0.239)		(0.374)	
Family has financial difficulties	-0.074	0.929	-0.061	0.941	0.190	1.209
	(0.129)		(0.117)		(0.177)	
Father's occupation						
Manual father or male head	Base					
Non-manual father or male head	0.052	1.053	-0.247*	0.781	-0.078	0.925
	(0.134)		(0.137)		(0.284)	
Professional (intermediate group) father or male head	-0.079	0.924	-0.707**	0.493	0.384	1.469
	(0.122)		(0.131)		(0.273)	
No father or male head	0.105	1.110	0.067	1.069	0.919*	2.508
	(0.252)		(0.272)		(0.547)	
Family structure						
No natural parents	Base					
One natural parent	-0.249	0.780	0.562	1.754	-1.101	0.333
	(0.567)		(0.648)		(0.889)	
Both natural parents	0.719	2.052	2.169**	8.746	-2.985**	0.051
	(0.591)		(0.688)		(0.958)	
Number of children	0.291**	1.338	0.251**	1.285	-0.323**	0.724
	(0.038)		(0.038)		(0.064)	
Parents' housing tenure						
Accommodation tied to occupation or other situation	Base					
Public tenants	0.014	1.014	-0.443**	0.642	0.850*	2.341
	(0.207)		(0.198)		(0.377)	
Private tenants	0.279	1.321	0.326	1.385	0.451	1.569
	(0.218)		(0.209)		(0.388)	
Owners or buying	-0.620**	0.538	-0.876**	0.417	0.551	1.735
	(0.210)		(0.200)		(0.386)	
Parents' ambition						
Have ambition	0.406**	1.501	0.653**	1.920	-0.763**	0.466
	(0.076)		(0.073)		(0.125)	
School						
School is maintained by a Local Education Authority	0.283	1.327	0.587**	1.799	-0.891	0.410
	(0.189)		(0.223)		(0.684)	
Region						
Scotland	Base					
North western	0.536	1.709	-0.019	0.981	1.330	3.781
	(0.561)		(0.548)		(1.238)	
Northern	0.625	1.868	0.944	2.569	3.115**	22.542
	(0.568)		(0.618)		(1.579)	
East and west Riding	0.590	1.804	0.015	1.015	2.398	11.004
	(0.624)		(0.583)		(1.691)	
North Midlands	1.388**	4.008	0.532	1.702	1.028	2.796
	(0.624)		(0.607)		(1.318)	
Eastern	0.409	1.505	-0.191	0.827	2.388*	10.895
	(0.562)		(0.590)		(1.354)	
London and South eastern	0.537	1.711	-0.067	0.935	1.600	4.952
	(0.545)		(0.544)		(1.274)	
Southern	0.142	1.153	0.004	1.004	1.275	3.578
	(0.602)		(0.575)		(1.402)	
South West	0.156	1.169	0.277	1.319	1.690	5.417
	(0.704)		(0.568)		(1.478)	
Midlands	0.319	1.376	0.345	1.412	0.920	2.510
	(0.619)		(0.563)		(1.224)	
Wales	0.071	1.074	-0.561	0.570	0.366	1.442
	(0.781)		(0.739)		(1.765)	
Pseudo R-squared	0.0574		0.1011		0.1354	
Observations	6161		6541		1872	

Table 4.3b: Random effects probit for girls.

	Bad behaviour		Extreme bad behaviour		Referred to a social agency	
	Coeff.	M.E.	Coeff.	M.E.	Coeff.	M.E.
Parental labour market situation						
No father unemployment + mother works						
No father unemployment + mother does not work	0.082**	2.705	0.183**	5.875	-0.069	-1.045
	(0.034)		(0.032)		(0.048)	
Father unemployment + mother works	0.301**	9.316	0.171	5.472	-0.161	-2.322
	(0.147)		(0.121)		(0.157)	
Father unemployment + mother does not work	0.430**	12.751	0.140	4.427	0.009	0.139
	(0.153)		(0.118)		(0.141)	
Family has financial difficulties	0.099	3.194	0.103*	3.348	0.240**	4.114
	(0.068)		(0.060)		(0.079)	
Father's occupation						
Manual father or male head						
Non-manual father or male head	-0.062	-2.034	-0.027	-0.876	-0.065	-0.946
	(0.055)		(0.050)		(0.080)	
Professional (intermediate group) father or male head	-0.178**	-6.001	-0.234**	-7.199	0.067	1.055
	(0.048)		(0.046)		(0.071)	
No father or male head	-0.163	-5.468	-0.230*	-7.089	0.311*	5.578
	(0.126)		(0.125)		(0.171)	
Family structure						
No natural parents						
One natural parent	-0.316*	-10.511	-0.024	-0.700	-0.166	-4.348
	(0.188)		(0.174)		(0.207)	
Both natural parents	-0.125	-3.964	0.146	4.471	-0.681**	-14.423
	(0.173)		(0.159)		(0.187)	
Number of children	0.088**	2.836	0.080**	2.607	0.031**	1.314
	(0.012)		(0.011)		(0.014)	
Parents' housing tenure						
Accommodation tied to occupation or other situation						
Public tenants	0.0001	0.002	-0.070	-2.359	0.168	2.483
	(0.080)		(0.072)		(0.108)	
Private tenants	0.184*	5.559	0.235**	8.423	0.084	1.177
	(0.096)		(0.085)		(0.127)	
Owners or buying	-0.171**	-5.747	-0.244**	-7.805	0.069	0.962
	(0.080)		(0.072)		(0.110)	
Parents' ambition						
Have ambition	0.142**	4.765	0.210**	6.463	-0.469**	-8.272
	(0.038)		(0.036)		(0.051)	
School						
School is maintained by a Local Authority	0.319**	11.232	0.177**	5.350	0.154	2.157
	(0.087)		(0.090)		(0.170)	
Region						
Scotland						
North western	0.192**	6.269	0.074	2.411	0.160*	2.585
	(0.071)		(0.062)		(0.089)	
Northern	0.094	3.150	0.067	2.169	0.191**	3.143
	(0.079)		(0.069)		(0.097)	

Table 4.3b (ctd.)

East and west Riding	0.075	2.525	-0.015	-0.464	-0.025	-0.361
	(0.084)		(0.074)		(0.109)	
North Midlands	0.161**	5.296	-0.060	-1.870	0.039	0.585
	(0.082)		(0.072)		(0.103)	
Eastern	0.159**	5.241	0.078	2.543	-0.019	-0.283
	(0.080)		(0.070)		(0.104)	
London and South eastern	0.077	2.597	-0.009	-0.288	-0.125	-1.704
	(0.070)		(0.062)		(0.094)	
Southern	0.011	0.390	-0.010	-0.318	-0.064	-0.911
	(0.084)		(0.075)		(0.110)	
South West	0.044	1.503	0.022	0.706	-0.033	-0.483
	(0.085)		(0.075)		(0.112)	
Midlands	-0.029	-0.994	-0.101	-3.121	0.077	1.181
	(0.076)		(0.068)		(0.096)	
Wales	0.044	1.489	-0.075	-2.318	0.150	2.411
	(0.093)		(0.082)		(0.115)	
Time-invariant characteristics						
Teenage mother	0.228**	7.143	0.127**	4.146	-0.050	-0.743
	(0.066)		(0.054)		(0.076)	
Mother left school at 16 or older	-0.011	-.0350	0.0002	0.007	-0.003	-0.039
	(0.049)		(0.045)		(0.068)	
Father left school at 16 or older	-0.062	-2.067	-0.012	-0.369	-0.169**	-2.417
	(0.053)		(0.048)		(0.077)	
Above average score (reading)	-0.093**	-3.055	-0.130**	-4.207	-0.331**	-5.338
	(0.043)		(0.037)		(0.052)	
Above average score (math)	0.017	-0.554	-0.040	-1.267	-0.250**	-3.860
	(0.039)		(0.034)		(0.049)	
Quick to settle in class	-0.013	-0.415	-0.081**	-2.587	-0.136**	-2.150
	(0.042)		(0.037)		(0.051)	
Emotional maladjustment	0.417**	12.212	0.341**	11.714	0.456**	8.749
	(0.101)		(0.079)		(0.098)	
Constant	0.064		-1.074**		-0.314	
	(0.219)		(0.205)		(0.285)	
Rho (cross-period correlation)	0.336**		0.204		0.170	
	(0.019)		(0.020)		(0.041)	
LR test, rho = 0 ($\chi^2(1)$)	332.87		107.43		17.88	
Pseudo R-squared	0.024		0.033		0.098	
Predicted probability	0.706		0.274		0.099	
Observations	10823		10823		7565	

Table 4.4a: Percentage of boys facing various outcomes according to their family background (whole sample).

	Has been in contact with the police	Referred to a social agency	Bad behaviour (reported by parents)	Extreme bad behaviour (reported by parents)	Bad behaviour (reported by school)
Father unemployed or sick	***32.5***	***32.6***	***58.3***	***18.6***	***57.9***
Father not unemployed nor sick	***15.6***	***14***	***49.9***	***7.4***	***38.4***
Financial difficulties	***31.9***	***34.8***	***69.6***	***21.3***	***60.4***
No financial difficulties	***14.5***	***12.5***	***48.0***	***6.4***	***36.9***
Unemployment difficulties	***35.6***	***27.8***	58.4	***18.8***	***54.7***
No unemployment difficulties	***16.0***	***14.5***	50.1	***7.7***	***38.9***
Mother works	**15.6**	***13.3***	49.6	***6.7***	**38.1**
Mother does not work	**17.8**	***17.3***	51.4	***10.1***	**41.1**
No male head	***26.1***	***31.6***	***61.4***	***12.4***	***55.6***
Male head	***15.6***	***13.4***	***49.5***	***7.6***	***38***

Table 4.4b: Percentage of girls facing various outcomes according to their family background (whole sample)

	Has been in contact with the police	Referred to a social agency	Bad behaviour (reported by parents)	Extreme bad behaviour (reported by parents)	Bad behaviour (reported by school)
Father unemployed or sick	**9.4**	***25.2***	***62.9***	***17.5***	***53.1***
Father not unemployed nor sick	**5.8**	***8.7***	***51.8***	***7.5***	***31.2***
Financial difficulties	***12.4***	***25.6***	***70.6***	***19.7***	***51.5***
No financial difficulties	***5.2***	***7.6***	***50.2***	***6.7***	***29.9***
Unemployment difficulties	***14.6***	***31.1***	***74.3***	***23.8***	***67.4***
No unemployment difficulties	***5.8***	***9.1***	***51.9***	***7.7***	***31.5***
Mother works	5.9	***8.3***	52.6	***7.3***	31.9
Mother does not work	5.7	***10.9***	51.8	***9.4***	32.1
No male head	7.6	***18.8***	**57.3**	***11.1***	***43.9***
Male head	5.7	***8.5***	**51.8**	***7.6***	***31***

Notes to tables 4.4a and 4.4b:

(2) Pearson χ^2 statistical tests were carried out to check the significance of the relationships. Numbers in bold and italics indicate that the relationship is significant at the 1% level, in numbers bold only indicate that it is significant at the 5% level, while underlined numbers indicate that it is significant at the 10% level.

(3) All variables are measured when the child is sixteen years of age.

(4) The numbers represent the proportion of children facing a particular outcome according to their family background. For example, 9.4% of girls with a father unemployed or sick have been in contact with the police.

Table 4.5a: Cross-section (probit) estimations for boys. Part I.

	Bad behaviour (reported by parents)		Extreme bad behaviour (reported by parents)		Bad behaviour (reported by school)	
	Coeff.	M. E.	Coeff.	M. E.	Coeff.	M. E.
Father's unemployment						
No experience of unemployment						
Possible experience of unemployment	-0.017	-0.664	-0.263*	-2.251	-0.059	-2.186
	(0.085)		(0.142)		(0.095)	
Some experience of unemployment	0.053	2.115	-0.018	-0.184	0.315**	12.178
	(0.097)		(0.140)		(0.100)	
Repeated experiences of unemployment	0.131	5.199	-0.016	-0.164	0.258	9.976
	(0.210)		(0.243)		(0.235)	
Mother's employment						
Working mother in couple (7)						
Non-working mother in couple (7)	-0.054	-2.170	-0.064	-0.649	-0.147**	-5.512
	(0.058)		(0.088)		(0.061)	
Lone working mother (7)	0.138	5.501	0.423	5.929	0.199	7.668
	(0.290)		(0.333)		(0.284)	
Lone non-working mother (7)	-0.415	-1.610	0.007	0.074	0.520	20.391
	(0.454)		(0.514)		(0.466)	
Working mother in couple (11)						
Non-working mother in couple (11)	-0.182**	-7.251	-0.086	-0.853	-0.053	-1.982
	(0.061)		(0.092)		(0.066)	
Lone working mother (11)	-0.297	-1.170	-0.294	-2.342	0.024	0.887
	(0.272)		(0.340)		(0.277)	
Lone non-working mother (11)	-0.092	-3.675	-0.865**	-4.358	-0.108	-3.948
	(0.337)		(0.415)		(0.324)	
Working mother in couple (16)						
Non-working mother in couple (16)	0.047	1.885	0.086	0.896	0.012	0.442
	(0.063)		(0.091)		(0.066)	
Lone working mother (16)	0.011	0.433	0.130	1.449	0.255	9.864
	(0.208)		(0.249)		(0.213)	
Lone non-working mother (16)	0.141	5.608	0.465	6.714	0.293	11.382
	(0.258)		(0.303)		(0.281)	
Financial difficulties						
No financial difficulties						
Possible financial difficulties	-0.013	-0.519	0.342	4.530	0.568**	22.267
	(0.252)		(0.310)		(0.249)	
Some financial difficulties	0.146*	5.806	0.074	0.787	0.209**	8.005
	(0.084)		(0.122)		(0.089)	
Repeated financial difficulties	0.185	7.328	0.549**	8.234	-0.014	-5.246
	(0.152)		(0.171)		(0.153)	
Personal characteristics						
Quick to settle in class	-0.111*	-4.421			-0.060	-2.267
	(0.057)				(0.060)	
Above average score (math)	-0.240**	-9.523			-0.060	-2.260
	(0.079)				(0.083)	
Above average score (reading)	0.313**	0.123	0.569**	3.684	-0.204	-7.836
	(0.163)		(0.244)		(0.161)	
Emotional maladjustment	0.295**	1.161	0.455**	6.383	1.42E-5	0.0005
	(0.123)		(0.150)		(0.125)	
Child has been in care	0.293	0.116	0.717**	12.225	0.146	5.570
	(0.182)		(0.191)		(0.180)	
Reported once above average knowledge	-0.142**	-5.666			-0.165	-6.065
	(0.067)				(0.071)	
Reported twice above average knowledge	-0.170**	-6.767			-0.296**	-10.620
	(0.080)				(0.087)	
Help in school	0.321	12.604	0.456**	6.567	0.148**	5.657
	(0.246)		(0.247)		(0.263)	
Family social characteristics						
Number of moves since the child's birth	0.043**	1.714	0.029	0.293	-0.001	-0.024
	(0.018)		(0.025)		(0.018)	
No natural parents						
Broken family	-0.347	-13.638	-0.199	-1.755	-0.120	-4.382
	(0.302)		(0.363)		(0.292)	

Table 4.5a (ctd.)

Intact family	-0.512*	-19.804	-0.478	-6.556	-0.411	-15.975
	(0.275)		(0.322)		(0.263)	
Parents' initiative once	0.003	0.116	0.170	1.784	-0.064	-2.375
	(0.070)		(0.106)		(0.073)	
Parents' initiative twice	-0.043	-1.722	-0.049	-0.493	-0.101	-3.760
	(0.074)		(0.118)		(0.076)	
Parents' ambition 1	-0.122	-4.857	-0.125	-1.364	0.081	0.300
	(0.078)		(0.108)		(0.082)	
Parents' ambition 2	-0.031	-1.245	-0.059	-0.609	-0.009	-0.348
	(0.069)		(0.098)		(0.073)	
Parents' ambition 3	-0.182**	-7.268	-0.222**	-2.307	-0.446**	-16.755
	(0.060)		(0.091)		(0.063)	
Parents were never owners in three sweeps						
Parents were owners once in three sweeps	-0.073	-2.923	-0.231	-1.985	-0.086	-3.160
	(0.102)		(0.158)		(0.107)	
Parents were owners twice in three sweeps	-0.092	-3.649	-0.273	-2.279	0.013	0.501
	(0.103)		(0.170)		(0.108)	
Parents were owners three times in three sweeps	-0.111**	-4.438	-0.158	-1.555	-0.179**	-6.644
	(0.065)		(0.103)		(0.069)	
Number of children	0.085**	3.372	0.147**	1.485	0.090**	3.383
	(0.020)		(0.027)		(0.021)	
Teenage mother	0.070	2.790	0.160**	1.795	0.211**	8.078
	(0.092)		(0.124)		(0.098)	
Mother left school at 16 or older	-0.170**	-6.750	-0.117	-1.121	-0.030	-1.111
	(0.074)		(0.127)		(0.079)	
Father left school at 16 or older	0.134*	5.322	0.0004	0.004	0.001	0.052
	(0.076)		(0.131)		(0.082)	
School and regions when child is 16						
Teacher/pupils ratio (%)	0.035	1.386	0.037	0.369	-0.016	-0.606
	(0.024)		(0.031)		(0.029)	
Pupils expelled	-0.120*	-4.794	0.019	0.190	0.062	2.294
	(0.070)		(0.110)		(0.075)	
Lives in North Western region	-0.137	-5.448			-0.179	-6.491
	(0.114)				(0.124)	
Lives in Northern region	0.027	1.081	0.073	0.773	0.205	7.845
	(0.115)		(0.153)		(0.122)	
Lives in East and West Riding region	0.020	0.791	-0.178	-1.586	-0.077*	-2.853
	(0.121)		(0.190)		(0.128)	
Lives in North Midlands region	0.185	7.352	0.340**	4.355	0.022	0.822
	(0.121)		(0.148)		(0.129)	
Lives in Eastern region	0.158	6.302	-0.094	-0.888	-0.019	-0.723
	(0.111)		(0.163)		(0.119)	
Lives in London or South Eastern region	0.059	2.342	0.361**	4.529	0.011	0.416
	(0.102)		(0.120)		(0.109)	
Lives in Southern region	-0.077	-3.068			0.030	1.144
	(0.124)				(0.134)	
Lives in South West region	-0.147	-5.847	0.252	3.043	0.005	0.184
	(0.124)		(0.162)		(0.132)	
Lives in Midlands region	0.100	3.967			0.037	1.377
	(0.111)				(0.118)	
Lives in Wales	0.002	0.783	0.106	1.158	-0.035	-1.303
	(0.128)		(0.190)		(0.135)	
Lives in Scotland						
Constant	0.440		-2.196**		0.547	
	(0.386)		(0.474)		(0.395)	
Number of observations	2561		2592		2455	
Pseudo R square	0.0651		0.1614		0.1087	
RESET	$\chi^2(1) = 5.81E\text{-}6$		$\chi^2(1) = 0.071$		$\chi^2(1) = 0.147$	
Heteroscedasticity	$\chi^2(50) = 55.832$		$\chi^2(43) = 56.760$		$\chi^2(50) = 55.386$	
Normality	$\chi^2(2) = 1.821$		$\chi^2(2) = 1.826$		$\chi^2(2) = 1.114$	
obs. P	0.498		0.072		0.372	
pred. P (at x-bar)	0.500		0.049		0.359	

Table 4.5b: Cross-section (probit) estimations for boys. Part II.

	Contact with the police		Referred to a social agency	
	Coeff.	M. E.	Coeff.	M. E.
Father's unemployment				
No experience of unemployment				
Possible experience of unemployment	0.113	2.458	0.0002	-.003
	(0.113)		(0.114)	
Some experience of unemployment	0.055	1.161	0.182*	3.719
	(0.111)		(0.103)	
Repeated experiences of unemployment	0.404*	10.237	0.524**	12.897
	(0.208)		(0.200)	
Mother's employment				
Working mother in couple (7)				
Non-working mother in couple (7)	-0.219**	-4.549	-0.193**	-3.608
	(0.078)		(0.072)	
Lone working mother (7)	0.391	9.868	0.376	8.634
	(0.288)		(0.266)	
Lone non-working mother (7)	-0.146	-2.775	-0.609	-7.622
	(0.501)		(0.440)	
Working mother in couple (11)				
Non-working mother in couple (11)	-0.047	-0.965	-0.042	-0.771
	(0.083)		(0.077)	
Lone working mother (11)	0.057	1.212	0.002	0.039
	(0.292)		(0.285)	
Lone non-working mother (11)	0.072	1.561	0.557	14.001
	(0.352)		(0.358)	
Working mother in couple (16)				
Non-working mother in couple (16)	-0.045	-0.930	-0.042	-0.783
	(0.081)		(0.077)	
Lone working mother (16)	0.254	5.985	0.426**	9.973
	(0.225)		(0.214)	
Lone non-working mother (16)	0.303	7.339	0.555**	13.896
	(0.287)		(0.265)	
Financial difficulties				
No financial difficulties				
Possible financial difficulties			-0.578	-7.422
			(0.446)	
Some financial difficulties			0.109	2.126
			(0.091)	
Repeated financial difficulties			0.419**	9.703
			(0.148)	
No financial difficulties				
Some or repeated financial difficulties	0.130	2.820		
	(0.090)			
Personal characteristics				
Quick to settle in class	-0.170**	-3.651	-0.162**	-3.134
	(0.073)		(0.068)	
Above average score (math)	-0.116	-2.521	-0.080	-1.541
	(0.091)		(0.087)	
Above average score (reading)	0.027	0.548	-0.196	-4.067
	(0.176)		(0.158)	
Emotional maladjustment	0.097	2.102	0.074	1.445
	(0.143)		(0.139)	
Child has been in care	0.532**	14.210	0.635**	16.373
	(0.191)		(0.173)	
Reported once above average knowledge	-0.324**	-6.049	-0.331**	-5.529
	(0.098)		(0.092)	
Reported twice above average knowledge	0.021	0.443	-0.255**	-4.286
	(0.116)		(0.114)	
Help in school	0.076	1.650	0.503**	1.290
	(0.281)		(0.221)	
Family social characteristics				
Number moves since the child's birth	-0.004	-0.079	-0.005	-0.093
	(0.022)		(0.021)	
No natural parents				
Broken family	-0.089	-1.776	0.088	1.716
	(0.362)		(0.335)	

Table 4.5b (ctd.)

Intact family	-0.286	-6.674	-0.155	-3.105
	(0.336)		(0.314)	
Parents' initiative once	-0.130	-2.650	-0.130	-2.370
	(0.084)		(0.079)	
Parents' initiative twice	-0.261**	-5.234	-0.246**	-4.459
	(0.093)		(0.088)	
Parents' ambition 1	0.210**	3.991	0.088	1.584
	(0.098)		(0.085)	
Parents' ambition 2	-0.100	-2.123	-0.156**	-3.062
	(0.083)		(0.078)	
Parents' ambition 3	-0.378**	-0.801	-0.335**	-6.443
	(0.078)		(0.073)	
Parents were never owners in three interviews				
Parents were owners once in three interviews	-0.041	-0.841	0.038	0.718
	(0.128)		(0.116)	
Parents were owners twice in three interviews	-0.059	-1.184	-0.079	-1.416
	(0.136)		(0.125)	
Parents were owners three times in three interviews	-0.028	-0.579	-0.154*	-2.809
	(0.086)		(0.083)	
Number of children	0.111**	2.306	0.096**	1.796
	(0.023)		(0.022)	
Teenage mother	0.269**	6.272	0.203**	4.185
	(0.111)		(0.103)	
Mother left school at 16 or older	-0.094	-1.880	-0.196*	-3.395
	(0.101)		(0.101)	
Father left school at 16 or older	-0.067	-1.349	-0.013	-0.245
	(0.110)		(0.103)	
School and regions when child is 16				
Teacher/pupils ratio when (%)	-0.044	-0.909		
	(0.032)			
Pupils expelled	-0.108	-2.337	0.068	1.232
	(0.089)		(0.088)	
Lives in North Western region	-0.171	-3.264	0.109	2.138
	(0.146)		(0.121)	
Lives in Northern region	-0.005	-0.109	0.074	1.435
	(0.143)		(0.124)	
Lives in East and West Riding region	0.041	0.859	0.371**	8.283
	(0.146)		(0.120)	
Lives in North Midlands region	-0.194	-3.639	0.057	1.085
	(0.152)		(0.137)	
Lives in Eastern region	-0.149	-2.883	0.177	3.603
	(0.147)		(0.120)	
Lives in London or South Eastern region	-0.202	-3.825	0.116	2.271
	(0.138)		(0.113)	
Lives in Southern region	-0.263	-4.758		
	(0.173)			
Lives in South West region	-0.203	-3.798		
	(0.166)			
Lives in Midlands region	-0.206	-3.877	0.183	3.720
	(0.144)		(0.119)	
Lives in Wales	-0.086	-1.696	0.162	3.286
	(0.167)		(0.143)	
Lives in Scotland				
Constant	-0.103		-0.536	
	(0.455)		(0.388)	
Number of observations	2317		2849	
Pseudo R square	0.1371		0.1968	
RESET	$\chi^2(1) = 0.306$		$\chi^2(1) = 0.674$	
Heteroscedasticity	$\chi^2(48) = 61.829$		$\chi^2(47) = 62.005$	
Normality	$\chi^2(2) = 0.816$		$\chi^2(2) = 2.649$	
obs. P	0.157		0.151	
pred. P (at x-bar)	0.126		0.109	

Table 4.6a: Cross-section (probit) estimations for girls. Part I.

	Bad behaviour (reported by parents)		Bad behaviour (reported by school)	
	Coeff.	M. E.	Coeff.	M. E.
Father's unemployment				
No experience of unemployment				
Possible experience of unemployment	0.088	3.507	0.139	4.879
	(0.084)		(0.096)	
Some experience of unemployment	-0.073	-2.900	0.285**	10.326
	(0.092)		(0.100)	
Repeated experiences of unemployment	0.311	12.123	0.522**	19.714
	(0.223)		(0.230)	
Mother's employment				
Working mother in couple (7)				
Non-working mother in couple (7)	0.047	1.882	-0.027	-0.908
	(0.057)		(0.064)	
Lone working mother (7)	-0.155	-6.155	0.241	8.706
	(0.216)		(0.246)	
Lone non-working mother (7)	0.185	7.312	-0.017	-0.594
	(0.495)		(0.607)	
Working mother in couple (11)				
Non-working mother in couple (11)	-0.130**	-5.194	-0.154**	-5.191
	(0.062)		(0.069)	
Lone working mother (11)	-0.256	-10.166	-0.702**	-18.827
	(0.217)		(0.260)	
Lone non-working mother (11)	-0.068	-2.730	-0.197	-6.348
	(0.296)		(0.326)	
Working mother in couple (16)				
Non-working mother in couple (16)	-0.074	-2.963	-0.161**	-5.405
	(0.061)		(0.069)	
Lone working mother (16)	-0.174	-6.911	0.125	4.410
	(0.184)		(0.207)	
Lone non-working mother (16)	-0.193	-7.671	0.177	6.334
	(0.231)		(0.243)	
Financial difficulties				
No financial difficulties			Base	
Possible financial difficulties			0.326	12.011
			(0.268)	
Some financial difficulties			0.331**	12.016
			(0.089)	
Repeated financial difficulties			0.314**	11.484
			(0.153)	
No or possible financial difficulties	Base			
Some financial difficulties	0.232**	9.171		
	(0.086)			
Repeated financial difficulties	0.321**	12.521		
	(0.142)			
Personal characteristics				
Quick to settle in class	0.022	0.879	-0.055	-1.903
	(0.058)		(0.065)	
Above average score (math)			0.076	2.598
			(0.061)	
Above average score (reading)	-0.005	-0.212	-0.121*	-4.206
	(0.060)		(0.067)	
Emotional maladjustment	0.465**	17.812	0.082	2.881
	(0.134)		(0.136)	
Child has been in care			0.151	5.377
			(0.231)	
Reported once above average knowledge	-0.095	-3.771	-0.215**	-7.114
	(0.066)		(0.077)	
Reported twice above average knowledge	-0.097	-3.875	-0.058	-1.978
	(0.086)		(0.100)	
Help in school	0.209	8.226	0.727*	27.887
	(0.322)		(0.408)	
Family social characteristics				
Number of moves since the child's birth			0.023	0.781
			(0.019)	

Table 4.6a (ctd)

No natural parents				
Broken family	0.217	8.563	0.710	26.800
	(0.326)		(0.451)	
Intact family	0.072	2.879	0.494	14.818
	(0.310)		(0.438)	
Parents' initiative once	-0.032	-1.289	-0.100	-3.411
	(0.068)		(0.074)	
Parents' initiative twice	-0.100	-3.981	-0.206**	-6.950
	(0.071)		(0.079)	
Parents' ambition 1	-0.030	-1.199	-0.002	-0.065
	(0.071)		(0.077)	
Parents' ambition 2	-0.142**	-5.643	-0.069	-2.383
	(0.065)		(0.070)	
Parents' ambition 3	-0.116*	-4.598	-0.329**	-11.470
	(0.059)		(0.065)	
Parents were never owners in three sweeps				
Parents were owners once in three sweeps	0.105	4.171	-0.072	-2.435
	(0.092)		(0.106)	
Parents were owners twice in three sweeps	0.070	2.792	-0.062	-2.107
	(0.102)		(0.116)	
Parents were owners three times in three sweeps	-0.042	-1.663	-0.097	-3.306
	(0.063)		(0.072)	
Number of children	0.277**	11.052	0.035**	1.191
	(0.053)		(0.020)	
Number of children squared	-0.030**	-1.190		
	(0.007)			
Teenage mother			0.047	1.638
			(0.101)	
Mother left school at 16 or older	0.015	0.618	-0.100	-3.361
	(0.068)		(0.080)	
Father left school at 16 or older	-0.116*	-4.633	0.012	0.404
	(0.071)		(0.082)	
School and regions when child is 16				
Teacher/pupils ratio (%)	0.032	1.258	0.056*	1.924
	(0.027)		(0.030)	
Pupils expelled	0.104	4.152	-0.005	-0.183
	(0.072)		(0.083)	
Lives in North Western region	0.082	3.273	0.013	0.434
	(0.092)		(0.116)	
Lives in Northern region	0.150	5.930	-0.016	-0.555
	(0.102)		(0.126)	
Lives in East and West Riding region	-0.061	-2.443	-0.053	-1.777
	(0.112)		(0.142)	
Lives in North Midlands region	0.148	5.868	-0.041	-1.401
	(0.105)		(0.129)	
Lives in Eastern region			-0.102	-3.423
			(0.126)	
Lives in London or South Eastern region	0.108	4.300	0.027	0.924
	(0.086)		(0.113)	
Lives in Southern region	-0.017	-0.680	-0.022	-0.737
	(0.106)		(0.135)	
Lives in South West region	-0.002	-0.067	0.209	7.472
	(0.103)		(0.128)	
Lives in Midlands region	-0.050	-1.977	0.108	3.793
	(0.094)		(0.117)	
Lives in Wales	0.073	2.914	0.164	5.824
	(0.121)		(0.141)	
Lives in Scotland				
Constant	-0.529		-0.959*	
	(0.379)		(0.492)	
Number of observations	2723		2487	
Pseudo R square	0.0441		0.0965	
RESET	$\chi^2(1) = 2.612$		$\chi^2(1) = 0.913$	
Heteroscedasticity	$\chi^2(45) = 56.812$		$\chi^2(50) = 41.348$	
Normality	$\chi^2(2) = 2.667$		$\chi^2(2) = 1.827$	
obs. P	0.516		0.306	
pred. P (at x-bar)	0.517		0.290	

Note: Robust standard errors in parentheses.

Table 4.6b: Cross-section (probit) estimations for girls. Part II.

	Contact with the police		Referred to a social agency	
	Coeff.	M. E.	Coeff.	M. E.
Father's unemployment				
No experience of unemployment				
Possible experience of unemployment	0.223*	2.238	0.002	0.0260
	(0.140)		(0.135)	
Some experience of unemployment	0.226*	2.298	0.263**	3.568
	(0.134)		(0.121)	
Repeated experiences of unemployment	0.463	5.850	0.210	2.822
	(0.261)		(0.215)	
Mother's employment				
Working mother in couple (7)				
Non-working mother in couple (7)			-0.078	-0.897
			(0.086)	
Lone working mother (7)			-0.366	-3.162
			(0.285)	
Lone non-working mother (7)			0.539	9.181
			(0.574)	
Working mother in couple (11)				
Non-working mother in couple (11)			-0.035	-0.398
			(0.093)	
Lone working mother (11)			-0.491*	-3.881
			(0.293)	
Lone non-working mother (11)			-0.618	-4.363
			(0.391)	
Working mother in couple (16)				
Non-working mother in couple (16)			-0.055	-0.622
			(0.090)	
Lone working mother (16)			0.040	0.478
			(0.240)	
Lone non-working mother (16)			0.158	2.049
			(0.267)	
Mother works (7)	-0.089	-0.777		
	(0.095)			
Mother works (11)	0.367*	2.953		
	(0.111)			
Mother works (16)	0.130	1.083		
	(0.107)			
No father or male head (7)	-0.203	-1.488		
	(0.388)			
No father or male head (11)	-0.423	-2.607		
	(0.346)			
No father or male head (16)	0.246	2.584		
	(0.218)			
Financial difficulties				
No or possible financial difficulties				
Some financial difficulties	0.005	0.039	0.230**	3.029
	(0.134)		(0.106)	
Repeated financial difficulties	0.117	1.119	0.567**	9.527
	(0.193)		(0.159)	
Personal characteristics				
Quick to settle in class	-0.063	-0.566	-0.010	-0.118
	(0.097)		(0.086)	
Above average score (math)	-0.142	-1.256		
	(0.087)			
Above average score (reading)			-0.216**	-2.644
			(0.082)	
Emotional maladjustment	0.064	0.588	0.253	3.476
	(0.208)		(0.162)	
Child has been in care			0.022	0.256
			(0.246)	
Reported once above average knowledge			-0.045	-0.508
			(0.112)	
Reported twice above average knowledge			-0.199	-2.027
			(0.166)	
Help in school			0.858**	17.741
			(0.322)	

Table 4.6b (ctd)

Family social characteristics				
Number of moves since the child's birth	0.025	0.218	-0.010	-0.111
	(0.026)		(0.025)	
No natural parents				
Broken family			0.209	2.728
			(0.539)	
Intact family			-0.272	-3.697
			(0.519)	
Parents' initiative once			0.012	0.143
			(0.093)	
Parents' initiative twice			-0.038	-0.436
			(0.102)	
Parents' ambition 1	-0.090	-0.826	-0.080	-0.956
	(0.105)		(0.094)	
Parents' ambition 2	0.084	0.702	0.113	1.241
	(0.103)		(0.090)	
Parents' ambition 3	-0.306**	-2.848	-0.264**	-3.196
	(0.095)		(0.082)	
Parents were never owners in three sweeps				
Parents were owners once in three sweeps			-0.101	-1.082
			(0.134)	
Parents were owners twice in three sweeps			0.071	0.858
			(0.153)	
Parents were owners three times in three sweeps			-0.238**	-2.628
			(0.100)	
Number of children	0.032	0.281	0.059**	0.683
	(0.030)		(0.026)	
Number of children squared				
Teenage mother			0.079	0.960
			(0.121)	
Mother left school at 16 or older			-0.178	-1.890
			(0.125)	
Father left school at 16 or older	-0.189	-1.495	-0.245*	-2.525
	(0.134)		(0.138)	
School and regions when child is 16				
Teacher/pupils ratio (%)	0.091**	0.787		
	(0.035)			
Pupils expelled	-0.054	-0.488	-0.167*	-2.105
	(0.122)		(0.100)	
Lives in North Western region			0.070	0.836
			(0.126)	
Lives in Northern region				
Lives in East and West Riding region			0.217	2.883
			(0.153)	
Lives in North Midlands region	0.429**	5.089	0.408**	6.100
	(0.132)		(0.131)	
Lives in Eastern region			0.123	1.525
			(0.147)	
Lives in London or South Eastern region			0.245**	3.254
			(0.121)	
Lives in Southern region				
Lives in South West region				
Lives in Midlands region			0.118	1.458
			(0.129)	
Lives in Wales				
Lives in Scotland				
Constant	-2.376**		-0.950*	
	(0.309)		(0.550)	
Number of observations	2632		2764	
Pseudo R square	0.0716		0.1435	
RESET	$\chi^2(1) = 0.183$		$\chi^2(1) = 0.414$	
Heteroscedasticity	$\chi^2(23) = 29.246$		$\chi^2(43) = 54.092$	
Normality	$\chi^2(2) = 1.819$		$\chi^2(2) = 3.869$	
obs. P	0.051		0.084	
pred. P (at x-bar)	0.040		0.057	

Table 4.7a: Average predicted probabilities for boys.

	Bad behaviour (parents)	Bad behaviour (school)	Contacts with police	Referral
Base person 1	0.590	0.456	0.194	0.214
Base person 1 but father has had repeated experiences of unemployment	0.637	0.552	0.312	0.371
Above situation + parents always wanted child to stay on at school	0.513	0.413	0.231	0.246
Above situation + parents took twice the initiative to meet the teachers	0.497	0.377	0.164	0.183
Base person 2	0.749	0.603	0.273	0.259
Base person 2 + parents always wanted child to stay on at school	0.637	0.464	0.197	0.159
Above situation + parents took twice the initiative to meet the teachers	0.622	0.426	0.137	0.113
Base person 3	0.629	0.500	0.233	0.250
Base person 3 but mother lives in couple and does not work when child is 7 and 11	0.542	0.426	0.165	0.189
Above situation but parents were interested in child's achievements	0.400	0.264	0.072	0.075
Base person 3 but parents were interested in child's achievements	0.488	0.329	0.112	0.108

Notes:

(1) Predicted probabilities are calculated for each individual and then averaged over all the individuals.

(2) Base person 1: father never unemployed, parents never wished the child to stay on at school, and never took the initiative to meet the teachers. All other variables at their actual values.

(3) Base person 2: child is in a non-intact family, parents never wished the child to stay on at school, and never took the initiative to meet the teachers. All other variables at their actual values.

(4) Base person 3: mother lives in couple and works when child is 7 and 11, parents were not interested in child's achievements (i.e. parents never wanted child to stay on at school and never took the initiative to meet the teachers).

(5) Parents were interested in child's achievements means that they always wanted child to stay on at school and took twice the initiative to meet the teachers

Table 4.7b: Average predicted probabilities for girls.

	Bad behaviour (parents)	Bad behaviour (school)	Contacts with police[2]	Referral
Base person 1	0.611	0.416	0.060	0.093
Base person 1 but father has had repeated experiences of unemployment	0.720	0.612	0.134	0.128
Above situation + parents always wanted child to stay on at school	0.620	0.462	0.080	0.090
Above situation + parents took twice the initiative to meet the teachers	0.582	0.385		0.084
Base person 2	0.590	0.284		0.141
Base person 2 + parents always wanted child to stay on at school	0.480	0.175		0.100
Above situation + parents took twice the initiative to meet the teachers	0.442	0.132		0.094
Base person 3	0.627	0.466		0.113
Base person 3 but mother lives in couple and does not work when child is 7 and 11	0.596	0.399		0.095
Above situation but parents were interested in child's achievements	0.447	0.205		0.061
Base person 3 but parents were interested in child's achievements	0.479	0.256		0.073

Notes:

(1) See notes on table 4.7a.

(2) For contacts with the police, base person 1 is the following: father never unemployed, parents never wished the child to stay on at school. All other variables at their actual values.

Table 4.8: Cross-section (probit) estimations with Local Authority variables for boys.

	Bad behaviour (parents)		Bad behaviour (school)	
	Coeff.	M. E.	Coeff.	M. E.
Father's unemployment				
No experience of unemployment				
Possible experience of unemployment	0.222*	8.773	0.054	1.999
	(0.125)		(0.141)	
Some experience of unemployment	0.292**	11.483	0.149	5.619
	(0.139)		(0.143)	
Repeated experiences of unemployment	0.377	14.618	0.169	6.433
	(0.303)		(0.320)	
Mother's employment				
Working mother in couple (7)				
Non-working mother in couple (7)	-0.087	-3.464	0.057	2.110
	(0.085)		(0.089)	
Lone working mother (7)	0.278	10.907	-0.337	-11.515
	(0.472)		(0.443)	
Lone non-working mother (7)	-0.192	-7.648	0.984	37.548
	(0.608)		(0.643)	
Working mother in couple (11)				
Non-working mother in couple (11)	-0.158*	-6.302	-0.149	-5.461
	(0.089)		(0.096)	
Lone working mother (11)	-0.761**	-28.096	0.209	8.003
	(0.382)		(0.371)	
Lone non-working mother (11)	0.389	15.061	-0.491	-15.997
	(0.534)		(0.563)	
Working mother in couple (16)				
Non-working mother in couple (16)	-0.079	-3.163	-0.051	-1.866
	(0.090)		(0.097)	
Lone working mother (16)	-0.497**	-19.244	0.047	1.753
	(0.275)		(0.278)	
Lone non-working mother (16)	-0.107	-4.247	0.397	15.440
	(0.362)		(0.361)	
Financial difficulties				
No financial difficulties				
Possible financial difficulties	0.025	1.006	0.608*	23.780
	(0.349)		(0.340)	
Some financial difficulties	0.025	1.015	0.318**	12.214
	(0.125)		(0.134)	
Repeated financial difficulties	0.254	10.006	-0.069	-2.506
	(0.227)		(0.222)	
Personal characteristics				
Quick to settle in class	-0.174**	-6.899	0.008	0.304
	(0.084)		(0.089)	
Above average score (math)	-0.243**	-9.579	-0.136	-5.119
	(0.120)		(0.122)	
Above average score (reading)	0.621**	23.594	-0.180	-6.851
	(0.229)		(0.236)	
Emotional maladjustment	0.467**	17.943	0.158	6.012
	(0.183)		(0.181)	
Child has been in care	0.146	5.588	0.093	3.517
	(0.259)		(0.242)	
Reported once above average knowledge	-0.086	-3.424	-0.207*	-7.481
	(0.098)		(0.106)	
Reported twice above average knowledge	-0.203*	-8.076	-0.152	-5.507
	(0.113)		(0.122)	
Help in school	0.915**	31.704	0.069	2.585
	(0.432)		(0.402)	
Family social characteristics				
Number of moves since the child's birth	0.061**	2.439	-0.007	-0.247
	(0.025)		(0.026)	
No natural parents				
Broken family	-0.039	-1.554	0.225	8.558
	(0.440)		(0.415)	
Intact family	-0.162	-6.415	0.006	0.217
	(0.411)		(0.382)	
Parents' initiative once	-0.059	-2.334	-0.074	-2.716
	(0.101)		(0.105)	
Parents' initiative twice	0.0004	0.014	-0.152	-5.611
	(0.107)		(0.112)	

Table 4.8 (ctd.)

Parents' ambition 1	-0.111	-4.416	0.113	4.115
	(0.113)		(0.118)	
Parents' ambition 2	0.030	1.197	0.028	1.019
	(0.101)		(0.107)	
Parents' ambition 3	-0.125	-4.971	-0.410**	-15.314
	(0.087)		(0.093)	
Parents were never owners in three sweeps				
Parents were owners once in three sweeps	0.042	1.678	0.046	1.705
	(0.135)		(0.143)	
Parents were owners twice in three sweeps	-0.164	-6.512	0.079	2.949
	(0.150)		(0.157)	
Parents were owners three times in three sweeps	-0.072	-2.872	-0.339**	-12.326
	(0.099)		(0.101)	
Number of children	0.099**	3.949	0.063**	2.316
	(0.029)		(0.031)	
Teenage mother	0.005	0.202	0.216	8.232
	(0.125)		(0.134)	
Mother left school at 16 or older	-0.232**	-9.248	-0.104	-3.796
	(0.106)		(0.116)	
Father left school at 16 or older	0.054	2.143	-0.106	-3.892
	(0.108)		(0.118)	
School and regions when child is 16				
Teacher/pupils ratio (%)	0.032	1.280	-0.074**	-2.756
	(0.033)		(0.040)	
Pupils expelled	-0.232**	-9.164	-0.046	-1.698
	(0.102)		(0.110)	
Lives in North Western region	0.132	5.231	-0.024	-0.872
	(0.190)		(0.172)	
Lives in Northern region	-0.019	-0.775	0.312	11.988
	(0.166)		(0.158)	
Lives in East and West Riding region	0.232	9.151	-0.018	-0.647
	(0.196)		(0.181)	
Lives in North Midlands region	0.380*	14.801	0.140	5.301
	(0.216)		(0.179)	
Lives in Eastern region	0.222	8.786	-0.002	-0.088
	(0.178)		(0.159)	
Lives in London or South Eastern region	0.036	1.425	-0.071	-2.607
	(0.185)		(0.166)	
Lives in Southern region	0.024	0.963	-0.021	-0.757
	(0.196)		(0.179)	
Lives in South West region	-0.046	-1.833	-0.001	-0.036
	(0.197)		(0.165)	
Lives in Midlands region	0.152	6.045	0.184	6.980
	(0.187)		(0.173)	
Lives in Wales	0.217	8.561		
	(0.217)			
Lives in Scotland				
Local Authority characteristics				
Unemployment and sick rate above average	-0.065	-2.604		
	(0.099)			
Proportion of married women working above average	0.035	1.411	-0.128	-4.712
	(0.095)		(0.093)	
Proportion of council tenants above average	-0.065	-2.572		
	(0.101)			
Proportion of new Commonwealth immigrants above average	0.040	1.607	0.147	5.510
	(0.104)		(0.110)	
Proportion of non-manuals above average	0.054	2.161	0.185*	6.852
	(0.087)		(0.090)	
Number of persons per room above average	0.148	5.890		
	(0.111)			
Constant	-0.282		0.495	
	(0.574)		(0.554)	
Number of observations	1277		1215	
Pseudo R square	0.0784		0.1203	
RESET	$\chi^2(1) = 0.131$		$\chi^2(1) = 0.009$	
Heteroscedasticity	$\chi^2(56) = 66.489$		$\chi^2(56) = 64.226$	
Normality	$\chi^2(2) = 4.639$		$\chi^2(2) = 4.600$	
obs. P	0.509		0.367	
pred. P (at x-bar)	0.513		0.350	

Table 4.9: Cross-section (probit) estimations with Local Authority variables for girls.

	Bad behaviour (reported by parents)		Bad behaviour (reported by school)	
	Coeff.	M. E.	Coeff.	M. E.
Father's unemployment				
Possible experience of unemployment	0.146	5.808	0.049	1.702
	(0.101)		(0.115)	
Some experience of unemployment	0.055	2.204	0.280**	10.219
	(0.115)		(0.122)	
Repeated experiences of unemployment	0.637**	23.545	0.681**	26.136
	(0.282)		(0.282)	
Mother's employment				
Non-working mother in couple (7)	-0.053	-2.125	-0.054	-1.886
	(0.070)		(0.076)	
Lone working mother (7)	-0.692**	-26.026		
	(0.281)			
Lone non-working mother (7)	-0.170	-6.775		
	(0.550)			
Non-working mother in couple (11)	-0.146**	-5.810	-0.200**	-6.804
	(0.076)		(0.084)	
Lone working mother (11)	-0.166	-6.612		
	(0.279)			
Lone non-working mother (11)	0.160	6.340		
	(0.391)			
Non-working mother in couple (16)	-0.015	-0.588	-0.145**	-4.927
	(0.075)		(0.084)	
Lone working mother (16)	-0.261	-10.365		
	(0.239)			
Lone non-working mother (16)	-0.389	-15.282		
	(0.296)			
Lone (working or not) mother works (7)			-0.050	-1.697
			(0.294)	
Lone (working or not) mother works (11)			-0.409	-12.538
			(0.279)	
Lone (working or not) mother works (16)			0.066	2.319
			(0.221)	
Financial difficulties				
Possible financial difficulties			0.234	8.559
			(0.346)	
Some financial difficulties	0.203*	8.030	0.289**	10.507
	(0.104)		(0.106)	
Repeated financial difficulties	0.126	5.009	0.226	8.212
	(0.177)		(0.187)	
Personal characteristics				
Quick to settle in class	-0.002	-0.070	0.008	0.260
	(0.073)		(0.079)	
Above average score (math)			0.143*	4.906
			(0.074)	
Above average score (reading)	0.065	2.603	-0.128	-4.489
	(0.074)		(0.082)	
Emotional maladjustment	0.607**	22.644	0.151	5.409
	(0.174)		(0.172)	
Child has been in care			0.055	1.946
			(0.251)	
Reported once above average knowledge	-0.181**	-7.222	-0.267**	-8.857
	(0.082)		(0.094)	
Repoted twice above average knowledge	-0.151	-6.022	-0.082	-2.792
	(0.104)		(0.120)	
Help in school	-0.047	-1.872	0.964*	36.971
	(0.383)		(0.512)	
Family social characteristics				
Number of moves since the child's birth			0.027	0.939
			(0.022)	
No natural parents			-0.852*	-21.562
			(0.514)	
Broken family	0.226	8.922	0.241	8.752
	(0.358)		(0.165)	
Intact family	0.008	0.305		
	(0.336)			

Table 4.9 (ctd.)

Parents' initiative once	-0.026	-1.054	-0.017	-0.600
	(0.084)		(0.088)	
Parents' initiative twice	-0.069	-2.731	-0.136	-4.657
	(0.089)		(0.095)	
Parents' ambition 1	-0.005	-0.216	-0.045	-1.585
	(0.087)		(0.092)	
Parents' ambition 2	-0.222**	-8.781	-0.056	-1.944
	(0.080)		(0.086)	
Parents' ambition 3	-0.042	-1.673	-0.296**	-10.409
	(0.072)		(0.078)	
Parents were owners once in three sweeps	0.141	5.598	-0.123	-4.159
	(0.113)		(0.127)	
Parents were owners twice in three sweeps	0.106	4.194	-0.140	-4.676
	(0.128)		(0.140)	
Parents were owners three times in three sweeps	0.001	0.029	-0.099	-3.414
	(0.078)		(0.084)	
Number of children	0.264**	10.509	0.039	1.347
	(0.065)		(0.024)	
Number of children squared	-0.029**	-1.143		
	(0.009)			
Teenage mother			0.077	2.717
			(0.119)	
Mother left school at 16 or older	-0.067	-2.659	-0.095	-3.251
	(0.084)		(0.094)	
Father left school at 16 or older	0.002	0.064	0.082	2.891
	(0.087)		(0.096)	
School and regions when child is 16				
Teacher/pupils ratio (%)	-0.017	-0.665	0.017	0.590
	(0.031)		(0.034)	
Pupils expelled	0.150*	5.977	0.012	0.403
	(0.088)		(0.097)	
Lives in North Western region	-0.007	-0.267		
	(0.126)			
Lives in Northern region	0.024	0.940		
	(0.127)			
Lives in East and West Riding region	-0.177	-7.029		
	(0.146)			
Lives in North Midlands region	0.103	4.099		
	(0.143)			
Lives in London or South Eastern region	-0.007	-0.268		
	(0.123)			
Lives in Southern region	0.023	0.933		
	(0.139)			
Lives in South West region	0.021	0.820	0.295**	10.820
	(0.136)		(0.125)	
Lives in Midlands region	-0.132	-5.243		
	(0.129)			
Lives in Wales	-0.115	-4.595	0.318**	11.723
	(0.161)		(0.145)	
Local Authority characteristics				
Unemployment and sick rate above average	0.117	4.647	0.112	3.899
	(0.079)		(0.075)	
Proportion of married women working above average	-0.015	-0.612	-0.029	-1.008
	(0.076)		(0.077)	
Proportion of council tenants above average	0.130	5.187		
	(0.088)			
Proportion of new Commonwealth immigrants above average	0.008	0.332	0.172**	6.099
	(0.084)		(0.086)	
Proportion of non-manuals above average	0.066	2.616		
	(0.074)			
Number of persons per room above average	-0.109	-4.362		
	(0.091)			
Constant	-0.240		-0.431	
	(0.431)		(0.271)	
Number of observations	1822		1694	
Pseudo R square	0.0516		0.101	
RESET	$\chi^2(1) = 2.067$		$\chi^2(1) = 3.596$	
Heteroscedasticity	$\chi^2(51) = 68.747$		$\chi^2(42) = 55.503$	
Normality	$\chi^2(2) = 3.446$		$\chi^2(2) = 4.348$	
obs. P	0.517		0.315	
pred. P (at x-bar)	0.519		0.298	

Appendix: Variables' definitions

Panel estimations (variables are observed when the child is 7, 11, and 16)

Paper's denomination	Base category	Definition
Bad behaviour (reported by the parents)		Index of social behaviour in each sweep. It is equal to 1 if the child is found to have (often and/or sometimes) shown any of the following behaviours: irritable, fighting with others, destructive with his own and others' belongings, disobedient. It is equal to 0 if the child never shows any of these characteristics.
Extreme bad behaviour (reported by the parents)		Index of social behaviour in each sweep. It is equal to 1 if the child is found to have (often and/or sometimes) shown **at least half** of the following behaviours: irritable, fighting with others, destructive with his own and others' belongings, disobedient. It is equal to 0 otherwise.
Referred		It is equal to 0 if the child was not referred to an agency (because of difficulties which have affected their educational progress or behaviour) or to 1 if she/he was. List of agencies: Sweep 1: School health services, child guidance clinic, school psychological service, education welfare services or school attendance officer, children's department, private specialist. Sweep 2: Same as sweep 1 plus doctor and probation officer. Sweep 3: Social services or social work department (incl. children's department), educational welfare department, police or probation department, child guidance clinic.
Parental labour market situation		
No father unemployment + mother does not work Father unemployment + mother works Father unemployment + mother does not work	No father unemployment + mother works	Father unemployment: The family faces unemployment difficulties. Sweep 1: View of the interviewer. Sweep 2 and 3: father or male head has been unemployed for more than 6 weeks over the past 12 months. Mother work: Sweep 1: Any paid work since child's birth (before and/or after the child started school). Sweep 2: Any paid work outside home since child was 7. Sweep 3: Does the mother do paid work?
Family has financial difficulties	Does not	Sweep 1: View of the interviewer. Sweeps 2 and 3: Question to the parents (Have you had any financial difficulties over the past 12 months?).
Father's occupation		
Non-manual father or male head Professional (intermediate group) father or male head, No father or male head	Manual father or male head	Male head or father's occupation combined with whether a male head is living in the household.
Family structure		
One natural parent, both natural parents	No natural parents	Does the child live with his/her own mother (father)? (Answers combined)
Number of children		Number of children aged less than 21 years old living in the household.
Parents' housing tenure		
Public tenants Private tenants Owners or buying	Accommodation tied to occupation or other situation	There are four types of tenure; "owned or being bought", "privately rented", "rented from the public sector", and "rent free, tied to occupation, other".
Parents' ambition		
Have ambition	Do not	Do the parents want the child to stay on at school (i.e. have ambition)? Sweep 1: parents want child to stay on at secondary school when the child is 7

		Sweep 2: parents want child to stay on longer at school when the child is 11 Sweep 3: parents want child to stay in some form of full time education beyond minimum leaving age when the child is 16.
School		
School is maintained by a Local Authority	Is not	Asked to the headmaster of the school.
Region		
	Scotland	Live in North western, Northern, East and west Riding, North Midlands, Eastern, London and South eastern, Southern, South West, Midlands, Wales.
Time-invariant characteristics		
Teenage mother	Older than 20	Mother younger than 20 at child's birth
Mother (father) left school at 16 or older	15 or younger	Age father/father (mother) figure left full time education.
Above average score (reading) Above average score (math)	Below average	Scores from reading and arithmetic tests held when the child is 7. Marks go from 0 to 10 for arithmetics and from 0 to 30 for reading. Simple averages calculated for each sex.
Quick to settle in class	Not quick	The child adapted to being in class within one month when they started school at 7 years old. Information obtained from the school.
Emotional maladjustment	No	Child reported by the medical officer to be emotionally maladjusted at 7.

Cross-section estimations

Paper's denomination	Base category	Definition
Bad behaviour (reported by the parents)		Index of social behaviour when the child is sixteen. It is equal to 1 if the child is found to have (often and/or sometimes) shown any of the following behaviours: irritable, fighting with others, destructive with his own and others' belongings, disobedient, lies, bullies other children. It is equal to 0 if the child never shows any of these characteristics.
Extreme bad behaviour (reported by the parents)		Index of social behaviour when the child is sixteen. It is equal to 1 if the child is found to have (often and/or sometimes) shown **at least half** of the following behaviours: irritable, fighting with others, destructive with his own and others' belongings, disobedient, lies, bullies other children. It is equal to 0 otherwise.
Bad behaviour (reported by the school):		Index of social behaviour when the child is sixteen. It is equal to 1 if the child is found to have (often and/or sometimes) shown any of the following behaviours: irritable, fighting with others, destructive with his own and others' belongings, disobedient, lies, bullies other children, truant from school, has stolen on one or more occasions in the past twelve months, resentful or aggressive when corrected. It is equal to 0 if the child never shows any of these characteristics.
Referred		It is equal to 0 if the child was not referred to an agency (because of difficulties which have affected their educational progress or behaviour) or to 1 if she/he was. List of agencies: Social services or social work department (incl. children's department), educational welfare department, police or probation department, child guidance clinic.
Contacts with the police		Has the child been in contact with the police? We combined the information obtained from the school and the parents.
Father's unemployment		
Possible experience of unemployment Some experience of unemployment Repeated experiences of unemployment	No experience of unemployment	Based on same questions as in previous table. No experience of unemployment: father was never said to be unemployed Possible experience of unemployment: father was never said to be unemployed + missing responses Some experience of unemployment: father was said once to be unemployed Repeated experiences of unemployment: father was said twice to be unemployed + missing responses
Mother work		
Non-working mother in couple Lone working mother Lone non-working mother	Working mother in couple	Based on same questions as above table, combined with whether a male head lives in the household. Each variable is observed when child is 7, 11, and 16 years old
Financial difficulties		
Possible financial difficulties Some financial difficulties Repeated financial difficulties	No financial difficulties	Based on same questions as in previous table. No finanical difficulties: family never said that it had financial difficulties Possible financial difficulties: family never said that it had financial difficulties + missing responses Some financial difficulties: family said once that

		it had financial difficulties Repeated financial difficulties: family said twice that it had financial difficulties + missing responses
Personal characteristics		
Quick to settled in class	No	Same as in previous table
Above average score (math)	Below	
Above average score (reading)	Below	
Emotional maladjustment	No	
Child has been in care	No	Has the child ever been in care with a Local Authority or a Voluntary Society during his or her childhood?
Reported once above average knowledge Reported twice average knowledge	Never	The teacher thinks the child has an exceptional or above average general knowledge (recorded at ages 7 and 11 only).
Help in school	No	The child receives help in school because of behaviour difficulties (or should do) when aged 11.
Family social characteristics		
Number of moves since the child's birth	None	Number of times family has moved since the child's birth. 0 = 0, …, 9 = 9 times or more.
Broken family Intact family	No natural parents	No natural parents: both natural parents have always been missing. Broken family: one natural parent was missing at some point. Intact family: both natural parents were always present.
Parents' initiative once Parents' initiative twice	Never	Initiative once: parents were reported once to take the initiative to meet the teachers. Initiative twice: parents were reported twice to take the initiative to meet the teachers (when child is 7 and 11).
Parents' ambition 1, 2, 3	Never	Parents' ambition 1: parents want child to stay on at secondary school when the child is 7 (sweep 1) Parents' ambition 2: parents want child to stay on longer at school when the child is 11 (sweep 2) Parents' ambition 3: parents want child to stay in some form of full time education beyond minimum leaving age when the child is 16 (sweep 3)
Parents were owners once in three sweeps Parents were owners twice in three sweeps Parents were owners three times in three sweeps	Parents were never owners in three sweeps	Based on housing tenure questions (see previous table)
Number of children		Number of children (including study child) aged less than 21 years old living in the family when the child is 16.
Teenage mother	Older than 20	Same as in previous table
Mother left school at 16 or older Father left school at 16 or older	15 of younger	
School and regions when child is 16		
Teacher/pupils ratio (%)		When child is 16 years old.
Pupils expelled		Based on number of pupils expelled from school last year. Child is 16 years old. Variable is equal to 0 if none were expelled and to 1 otherwise.
Regions	Scotland	Lives in North western, Northern, East and west Riding, North Midlands, Eastern, London and South eastern, Southern, South West, Midlands, Wales

Chapter five

Childhood Experiences and Social Exclusion in Adult Life

5.1 Introduction

In the previous chapter, we found that the economic situation of the parents has some effect on their children (in terms of their social behaviour and the likelihood that they come in contact with the authorities). We need to determine whether this effect has long-term consequences on the children's future achievements. We intend to study this question through an analysis of whether disturbed social behaviour and family difficulties during youth impair the future integration of these individuals in society.

The question of social integration and exclusion is at the forefront of most European social policies. In view of the increase in social unrest, the importance of social cohesion has been outlined by national and European authorities. Given that unemployment and long-term unemployment rates have been persistently high in the past 25 years or so, the most obvious side to social exclusion in Europe is exclusion from the labour market. However, social exclusion may occur in other circumstances. We define the concept of social exclusion as an extension to the concept of financial poverty. We construct a composite index in order to measure the extent to which particular individuals are affected by social exclusion.

We find evidence that anti-social behaviour during teenage life is associated with longer-term difficulties, especially for men. The unemployment of the father is also found to be related to future difficulties for men but not for women. The labour market and marital situations of the mother do not have statistically significant coefficients in our specification; we can only show that women who had a mother who was living in couple and working when they were 11 years old are less likely to be socially excluded. Educational attainment and forming a partnership are factors which offset these negative influences.

Section 5.2 reviews the literature that deals with the relationships between childhood characteristics and various outcomes in adult life. Section 5.3 shows how we define and measure social exclusion, section 5.4 details the econometric model to be used, section 5.5 presents the specifications and provides an analysis of the results obtained, and section 5.6 concludes.

5.2 Evidence on the impact of past difficulties on future economic and social activities

5.2.1 Behaviour during adolescence and later life

Few economic studies have been concerned with the extent to which anti-social behaviour during youth has an impact on future social behaviour. Burgess and Propper (1998) analyse the link between early anti-social behaviour and future outcomes in life (such as earnings, earnings growth, labour supply and poverty rates). They use a US longitudinal survey in which young people (aged 14-22) were asked questions concerning anti-social activities they might be doing. They find[1] that, controlling for personal characteristics and family background, earnings and labour market participation for men in their late twenties are negatively affected by several behaviours in their adolescence: violent behaviour, extreme violence, running away from home and heavy substance use. By contrast, they find that light substance use and under-age alcohol consumption do not affect later earnings. Hobcraft (1998) uses the same data set as used in this chapter to study the relationship between various children's characteristics and future social exclusion[2] (defined with various

[1] They use ordinary least squares for continuous dependent variables and logit models for discrete dependent variables.

[2] He carries out logistic regressions, including as many explanatory variables as possible then arriving at a preferred specification through backward selection.

outcomes[3]). He finds evidence that anti-social behaviour[4] during teenage years is associated with greater risks of becoming a young mother for girls and of having multiple partnerships. These results suggest that there is a link between youth anti-social behaviour and future outcomes.

5.2.2 Educational attainment and future employment and earnings

There are numerous studies concerning the relationship between educational attainment and future earnings. Most of these are interested in the returns to schooling (see the work of Krueger (with Angrist, 1991 or Ashenfelter, 1994) and Taubman (1976) among others) or in the usefulness of public investment in education. These studies have shown that ability, family background, education and good school quality have positive influences on future earnings. More recent studies for the UK (e.g. Gregg and Machin, 2000) have identified an important association between educational attainment and future outcomes (such as earnings, unemployment, spells in prison, lone motherhood). Hobcraft (1998) finds that, especially for men, low income in adulthood is related to poor performance at school. However, there is no consensus about the relative size of these effects (or if some of them exist at all). This literature is extensive and we will not review it further here.

Several reasons can be found for the link between employment and educational attainment. Numerous studies show that unskilled people have a comparative disadvantage in the labour market, perhaps due to the decrease in the demand for their labour. When considering employment and unemployment rates in

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[3] These outcomes are the following: being a young parent, extra-marital birth, three or more partnerships, malaise (as measured in NCDS questionnaire), social housing, receiving benefits, homelessness, educational failure and income.

[4] This includes observation of whether the child frequently fought with other children, was irritable, was destructive and was disobedient.

various countries, higher qualifications seem to have a relatively protective effect against unemployment. One of the consequences is that young people stay longer in education in the hope of improving their employment prospects (Kodde, 1988). More generally, exogenous factors that tend to decrease educational attainments of young people will also have a negative impact on their future career.

5.2.3 Criminal records and future employment and earnings

Several arguments exist to explain the relationship between criminal activity and future employment and earnings. Being an ex-criminal could be used as a signal by employers who will hesitate to employ ex-convicts. People in jail would lose contact with the labour market, or see their skills decrease. The incentive to turn to crime could be higher than finding legal work, because of higher perceived returns for example. Finally, being in jail or turning to crime can be considered as similar to being in non-employment. This has potential long-term effects on future employment, even for young people. The idea is the same as for unemployment (Omori, 1997): being in non-employment can leave serious stigma, so that the return to legal employment may be difficult.

There is no consensus in the empirical literature. While some economists find strong and long-term effects, others find that these effects are short-lived. Freeman (1991) estimates linear probability models on several US data sets, and finds a strong effect of having been in jail on the probability of future employment. Moreover, this employment effect seems to be long-term. On the contrary, Grogger (1995), using quarterly data on young arrested people in California, applies a fixed effects method of estimation on a distributed lags model. He finds that the effects of arrests and jail sentences are rather short lived.

More recently, Gregg and Machin (2000), using the NCDS data set, find evidence that delinquency (defined as having been in contact with the police and having poor school attendance records up to age 16) is associated with future unemployment and a lower probability of being employed (at 23), as well as a higher probability of being in prison for males, and a higher probability of being a lone mother by 23 for women. They find that, for men, there is also an association between delinquency and employment and earnings at age 33, while the association disappears for women. However, they do not control for many individual characteristics so that their findings may be induced by unobservable variables. Hobcraft (1998) finds that men who were delinquent (i.e. had contacts with the police) are more likely to be unemployed as adults, to have multiple relationships, to be in social housing and to experience educational failure.

5.2.4 Family background and future outcomes

Family background (defined as the labour market situation of the parents, the structure of the family, the educational attainment of the parents, etc.) has been found in many studies to be associated with the outcomes of children during childhood and in adult life. Section 4.2.3 of the previous chapter showed evidence that disadvantageous situations are transmitted across generations. We also saw in the previous chapter that children's outcomes are affected by the structure of their family. In addition, the literature interested in the outcomes of children from step-families finds that adult offspring from these types of families continue to have more adjustment problems, are less satisfied with their lives, experience lower socio-economic attainment, and are more likely to be on welfare (see a review of findings in Hetherington et al. 1998). They are also more likely to exhibit anti-social behaviour.

5.3 The measurement of the children's future achievements

In contrast to previous related papers (e.g. Hobcraft, 1998), which attempt to explain various adult life outcomes, we aim to outline the determinants of a composite index of social exclusion. We consider that social exclusion at the level of the individual is defined as a combination of "bad" outcomes. For example, it would be difficult to argue that lone mothers or unemployed people are systematically socially excluded. A composite index is therefore useful because it indicates the degree to which a particular individual is excluded; the more of these bad outcomes he or she faces, the more likely he or she is to be considered socially excluded. Moreover, the weights given to each of the components of social exclusion can be considered the same across individuals living in the same country. We indeed consider that the norms which define how much individuals are socially excluded can differ from country to country, but not within each country. This is because citizens of one particular country would be sharing the same basic rights (in terms of the judiciary system, the rights to receive basic education and health care) and level of economic development. Because the concept of social exclusion has been widely used and is sometimes quite vague, before constructing this index, we need to provide a rigorous and meaningful definition of social exclusion.

5.3.1 The concept and its relevance

The *exclusion* of certain categories of persons from being full members of our societies has recently been a growing concern for western policy makers, in particular in Europe. Social exclusion is of relevance to economic and social policy for several reasons. First, economic development is supposed to improve the well-being of people. If one finds out that more and more people are significantly excluded from this general improvement, one may want to find ways to alter this phenomenon.

Second, if the working of society (in terms of social and educational policies as well as the rights of citizens) creates exclusion, one may also want to change policies to avoid these effects.

Because the concept of social exclusion is highly related to that of poverty and there are many ways to define and measure these two concepts, it is useful to first distinguish between the two. Economists are generally mostly concerned with questions of income inequality and poverty defined in terms of income or expenditure. Some have advocated the use of broader concepts of poverty, which would include a social dimension (Sen, 1992 and 1997). Sen brings the concept of poverty in the space of "capabilities", i.e. the opportunities to achieve full integration. To explain this idea Atkinson (1995) takes the example of a bike (a commodity). Its characteristic is "transportation" and it gives the "capability" of moving to the individual. This notion brings a social dimension to poverty; an individual who cannot afford a bike is not only excluded from owning a bike, but is also denied the advantages of its use. The concept of social exclusion builds on this definition of poverty. Bhalla and Lapeyre (1997) outline three dimensions to social exclusion: economic, social and political. According to them, the economic approach is concerned with questions of income and production and access to goods and services from which some people are excluded. The social dimension includes questions related to access to social services, access to the labour market, and the opportunity of social participation (i.e. relations among individuals as well as between citizens and the State). Finally the political dimension is concerned with the denial of human and political rights to certain groups of the population.

From the literature on social exclusion and poverty (see for example Yépez del Castillo (1994), Bhalla and Lapeyre (1997) and Atkinson (1998b)), we provide a unique definition of social exclusion. For our purpose and in the context of the UK,

we identify three areas in which individual social exclusion can be observed at the level of the individual. These are the labour market, consumption and citizenship. These are the main aspects of society to which individuals may be denied access. We should note that in a democracy such as the UK, social exclusion is more likely to be the product of inefficiencies rather than the result of voluntary actions from the government: social exclusion is not an aim. In contrast, political rights or others may be denied to parts of the population in certain countries. Rejection from the labour market is the most obvious form of social exclusion currently in Europe. Paid employment is probably the main way to be included as work gives a status and idleness may be synonym for uselessness (see previous chapter for a discussion on the psychological and financial effects of unemployment). As far as consumption is concerned, we mean here access to the basic necessities for social integration in an industrialised country, such as housing or access to services such as a phone. Finally, citizenship includes political participation as well as other form of social interactions.

The situation of individuals with respect to these three elements of social inclusion is the result of an interaction between them and other agents (other individuals, governments, employers, etc.). Social exclusion is therefore an outcome which depends on some factors related to the individuals' own characteristics but also some completely independent from them. Government intervention may influence the degree of social exclusion in many ways. For example, the State can provide basic education and health care or not. This provision will define whether individuals are likely to be excluded because of a lack of public provision of some goods and services. Social exclusion at the individual level, as studied here, is therefore a partial concept because it takes as given the supply side[5] as defined in Atkinson (1995). It is

[5] In other words, it takes as given the characteristics of the supply of goods and services: for example, the market structure, or the availability of different qualities of products.

measured relative to other ("integrated") people; there must therefore be a "norm" of social integration. The norm will depend on the country or the group of countries studied. Moreover, social exclusion cannot be identified at one point in time only, but also by the trajectories of people as well as their expectations. For example, a precarious and badly paid job may lead to social exclusion if the worker has no future promotion prospects but may on the contrary simply be a stage before having a well-paid job.

This analysis is helpful to construct our index of social exclusion.

5.3.2 Data, sample and variables

5.3.2.1 Data

The data set used is the British National Child Development Survey. As was explained in the previous chapter, this longitudinal data set contains five waves of information on people born in a week in March 1958. In this chapter, we use all five waves; we have information on individuals at ages 7, 11, 16, 23 and 33. The first three waves are described in the previous chapter; the fourth wave consists of an interview with the cohort member; the fifth wave also contains such an interview as well as questionnaires for the partner of the cohort members and for cohort members who are mothers. Some of the information covers the 10-year period between the ages of 23 and 33 years old.

5.3.2.2 The variables included in the social exclusion index

We attempt to catch all the aspects of social exclusion that are relevant in a country such as the UK with various variables available in our data set. Social exclusion is defined through observation of outcomes at 33 years old and between 24 and 33 years old. First, we consider that unemployment can be indicative of exclusion

in the labour market as it is expected to show rejection from employers or a mismatch between the individual and his or her job and workplace. The variable used in our index is a dummy that takes the value of one if the individual was in a spell of unemployment between 23 and 33 years old.[6] In the full sample, we find that 25 percent of people have such experience; i.e. at least one spell of unemployment lasting at least one month and during which the individual is unemployed and looking for a job.[7]

Second, we have an indication of exclusion in consumption (i.e. lack of access to goods or services generally needed to participate fully in social activities) thanks to several variables. One indicates whether the individual has ever been more than two months behind with rent or mortgage payments. Another variable shows whether the person has ever been homeless, one records whether the individual owns a car, and a final one whether there is a phone in the individual's home. Housing and access to certain services are the two main components of consumption which are indicative of social exclusion (Atkinson, 1998). Housing is a basic necessity; it also means having an address which is a requirement to receive benefits or more generally to be reachable. In the same way, having access to a phone enables people to be in contact with the external world, in particular potential employers. People without a car may also have difficulties gaining access to potential workplaces. The relevance of the latter variable depends on the availability of public transport, and we will verify whether our results are sensitive to its inclusion in the index.

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[6] This variable may seem a crude measure of exclusion from the labour market, but we consider that it is suitable for our analysis. Because of recall error, individuals are likely to under-report spells of unemployment especially if these occurred some time before the interview (see Elias, 1996). People may falsely report spells' dates and duration. Our simple measure of unemployment avoids these issues; moreover, it is likely to capture substantial periods of unemployment.

[7] Given this definition, we consider that people waiting to take up a new job would not report such a spell as being unemployed. Voluntary unemployed people might be included, but because this variable

Third, three variables indicate long-term difficulties and exclusion from usual social activities: whether the individual has problems writing, whether he or she could be identified as having drink problems during adult life and whether the person voted in the last General Election. For the drink problem variable, we use the CAGE questionnaire[8] which is included in the data set and is generally considered to be reliable in the health literature (Beresford et al., 1990). Although the three outcomes just mentioned might be initiated for very different reasons, they are considered to indicate difficulties in taking part in usual social activities.

As mentioned before, although taken separately these variables may not be indicative of social exclusion as such, their combination in a single index may be considered to be. In addition, because several of those are observed over a ten-year period, they can perhaps be trusted to show genuine social exclusion and not just a snapshot. We should point out here that we do not use relative income to measure social exclusion. We are not interested in a raw measure of poverty through income. We consider that the outcomes detailed above (such as difficulties in paying rent or mortgage) include the concept of poverty, defined as a state preventing people from carrying out *socially integrating* activities.

5.3.3 Construction of the social exclusion index

We use three different methods to construct our index of social exclusion. The first method consists in estimating a well-being equation and the second method uses

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is combined with other measures of social exclusion this should not be too big a problem.

[8] This questionnaire consists in four questions asked in the fifth sweep when people are 33 years old: have you ever felt that you ought to cut down on your drinking? Have people annoyed you by criticising your drinking? Have you ever felt guilty about your drinking? Have you ever had a drink first thing in the morning to steady your hands or get rid of a hangover? Two or more positive answers to these questions are considered indicative of drinking problems.

the principal components analysis. We also construct a "simple" index, in which all the variables have equal weight, for reference.

5.3.3.1 Well-being equation

In order to construct the index we estimate a well-being equation with the explanatory variables described in section 5.3.2.2. We consider that social exclusion is associated with lower individual well-being. We therefore expect that all the variables that we include in our index are negatively related to a measure of well-being. If this is the case, it provides a further justification that they should be included in our index as well as the weight they carry in that index.

We measure well-being through the answer of 33-year-old individuals to the following question: How satisfied are you with your life up to now? The index of well-being ranges from 0 to 10 (from completely dissatisfied to completely satisfied). Our dependent variable is the opposite of the latter; it goes from completely satisfied (score 0) to completely dissatisfied (score 10). We use an ordered probit model[9] with this index as dependent variable and the variables just mentioned as explanatory variables.[10] It is interesting to analyse the well-being equations for men and women. The results are reported in table B.5.1 (appendix B). We find that all the variables have the expected positive sign; they are all associated with lower life satisfaction. The majority of the explanatory variables are statistically significant. For men, only not having voted in the last election and having been homeless are statistically insignificant, while for women two variables are also insignificant: having problems writing and not having access to a phone. We calculate the fitted values for the

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[9] This model is described in section 5.4.

[10] These are the following: has been unemployed, has been homeless, was two months behind in paying rent or mortgage, does not own a car, does not have access to a phone, has not voted in the last General Election, has problems writing, and has drinking problems.

available sample and we use them as dependent variable (called index 1) in our specification. Graphs 5.1 and 5.2 show the distributions of the predicted values of the well-being equation for men and women respectively. We see that most people are concentrated in the lower tail of the distribution, indicating that they are less likely to be socially excluded. There are some differences between men and women in the distribution in the first three bands, but 75 percent of men and women are in the first three bands.

5.3.3.2 Principal components analysis

This statistical method consists in searching for the uncorrelated linear combinations of the original variables that capture all of the information in the original variables (Dunteman, 1994). The linear combinations are ordered so that the first few capture most of the variation in the original variables. In our case, the latter are the eight variables associated with social exclusion. For our purpose, we take the first linear combination (or component). As can be seen in table B.5.2 (appendix B), the weights in this linear combination are all positive. The first component can be interpreted as the general level of social exclusion. The fitted values corresponding to this linear combination are then obtained and retransformed into an index (called index 2). We should note that we found low correlation between the eight variables of interest, reflecting the fact that our concept and measure of social exclusion is quite broad, in other words includes very different aspects of social life, which may not be very correlated. Although the first component explains only around twenty per cent of the total variance of the eight variables, we assume that it captures enough information for the purpose of our index. Graphs 5.3 and 5.4 show the distribution of the fitted values used in the construction of index 2. We see that they are very similar

for men and women, now around 83 percent are in the first three bands.[11] Comparing indices 1 and 2, we note that they are highly correlated (with a correlation coefficient of around 0.9). Econometric specifications using these indices as dependent variables and identical sets of independent variables are likely to give similar results.

5.3.3.3 "Simple" index

For this index (called index 3), we simply add up all the variables. As they have a value of one if indicative of a bad outcome and of zero otherwise, the sum provides an idea of the degree of social exclusion. We choose to have three categories: all variables are equal to zero, one is equal to one, and two or more are equal to one.

5.4 Econometric modelling of social exclusion

We aim to determine whether adolescent behaviour and family background are linked to the probability of being socially excluded and to the degree of social exclusion in adult life. As in the previous chapter, we identify here only associations between factors and social exclusion; no causality is assumed to have been identified.

5.4.1 Model

From the fitted values obtained as described in section 5.3.2.1 and 5.3.2.2 we construct new indices. The lowest category includes all the individuals who have a value of zero, in other words who are not socially excluded. The rest of the positive values are divided into groups with equal number of observations. We obtain three to six categories, depending on the index. The highest category is expected to represent the individuals with the greatest risk of being socially excluded. These categories are

[11] Note that the bands are different for indices 1 and 2.

considered to represent the intervals in which the latent variable - social exclusion - falls. They are naturally ordered and range from 0 to J. The appropriate model here is an ordered response model in which the thresholds (μs) are unobserved. Namely, we use an ordered probit model. The probability that the index (y) be equal to a particular value j is the following:

$$P[y_i = j] = P[\mu_{j-1} \leq y_i^* < \mu_j] = G(\mu_j - x_i'\beta) - G(\mu_{j-1} - x_i'\beta) \quad (1)$$

with G the unit Normal cumulative distribution function and y^* the latent variable, given by the following model:

$$y_i^* = x_i'\beta + \varepsilon_I \quad (2)$$

Defining:

$$y_{ij} = 1 \text{ if } y_i = j \quad (3)$$

and 0 otherwise

We maximise the following log-likelihood:[12]

$$LogL = \sum_{i=1}^{n} \sum_{j=1}^{J} y_{ij} \log[\Phi(\mu_j - x_i'\beta) - \Phi(\mu_{j-1} - x_i'\beta)] \quad (4)$$

The results give us estimates of the coefficients of the explanatory variables as well as of the cut off points $\mu_1, \ldots, \mu_{J-1}$. μ_0 is equal to $-\infty$ and μ_J to $+\infty$. The set of explanatory variables does not contain a constant so that all the μ's are identified.

We carry out diagnostic tests to check for model misspecifications. These are reported in the last rows of each table. They are calculated following the formulae given in the appendix of the article by Machin and Stewart (1990).

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[12] The models are estimated using Stata (StataCorp, 1999).

Because we have a large number of explanatory variables, marginal effects are calculated only for variables which have a statistically significant coefficient. All our explanatory variables are dummies. The marginal effects are therefore calculated as the discrete change in the predicted probability as one variable changes values while other variables are kept at their means. For categorical dummies (such as educational qualifications) the other categories are set to 0.

5.4.2 The determinants of social exclusion

We assume that social exclusion during adulthood is a function of five types of influences: childhood personal characteristics, early adulthood personal characteristics, childhood family background, early adulthood family background, and adulthood environment. Appendices A and C show the descriptive statistics and the definition of all the variables that we use here. All these factors are measured before social exclusion is observed except adult environment which is measured at the same time. We assume that our controls are sufficient to take into account individual characteristics which could influence both our explanatory and dependent variables. All our explanatory variables can therefore be considered as pre-determined.

The childhood personal characteristics include the social behaviour of the children reported by the parents and the school when the cohort member is 16 years old. It also includes whether the child has been in contact with the police and whether he or she has been referred to a social agency at that age. These are variables of interest; we want to know whether anti-social behaviour during teenage years has a longer-term effect during adulthood. Because we are not able to fully use the longitudinal dimension of the data set, we aim to control for individuals' heterogeneity thanks to several variables (indicative of ability and early behaviour) all observed at an early age. Ability is measured by reports of the school on the child's

general knowledge and maths and reading scores of tests held when the child is 7. In the same way, we control for early signs of disrupted behaviour through a variable measuring whether they took longer than other children to settle in class when they first went to school.

Because outcomes in early adulthood may determine future life developments and possibly offset the effects of childhood disadvantages, we control for educational attainment and occupation when the individual is 23 years old. These are expected to be correlated with the probability that an individual is socially excluded. We also control for the personal situation of the cohort member, because individual outcomes cannot be considered independently of their family situation. The family structure of the individual is measured by several variables: whether he or she has a partner (and the situation of that partner), and whether they have children. Although we observe these variables before observing social exclusion, they may suffer from an endogeneity problem: people who are more likely to have a partner may also be less likely to become socially excluded. We choose to attempt to control for these individual effects by including personal characteristics, rather than by trying to model the probability of having a partner, which we consider hard to do in a satisfactory manner. In order to account for the effects of the environment in which the individual lives, we include dummies for the region of residence at 33.

Several family background variables are of particular interest to us. In particular we want to see whether the situation at 33 is significantly related to the family's economic situation during childhood (namely, spells of paternal unemployment, periods of financial difficulties and having a working mother). These variables are familiar from the previous chapter, although some are measured in a slightly different way. We consider that the influence of the labour market situation of the mother depends on whether a male head is present and on the age of the child. We

therefore design a variable that combines marital and labour market status and indicates all possible types of household. Because we are interested in the effects of recurrent difficulties, we enter paternal unemployment and financial difficulties through variables indicating the number of times the family suffered from these during the individual's childhood. We also control for the age at which the parents left school and other factors which may be thought of as having long-term effects (such as having a mother younger than 20 at birth, and having had a relative in prison).

Tables 5.1a to 5.1d show the means of all the variables included in our index of social exclusion for various samples of men and women. We see that, among the characteristics reported in our tables, we always find the highest proportion of people with bad outcomes in cases where the individuals had been referred to a social agency or had contacts with the police. The third group most at risk is either people reported badly behaved by the school or having no father or male head at 16 years old. A maths score above average (i.e. higher ability) improves the voting behaviour, access to a car and a phone, decreases the risk of having writing problems and arrears in rent or mortgage payments for both men and women. In addition, for men it is associated with lower risk of having a spell of unemployment. Having no education increases the risk of not voting and of having writing or rent problems, it also increases the risk of not having a car or a phone for women and men. Having a degree seems to be beneficial for all outcomes except homelessness for both sexes, and drinking problems for women. The latter may be related to a lower realisation of expectations for educated women. Overall, these simple means are consistent with the idea that teenage anti-social behaviour is associated with future "bad" outcomes. This effect seems bigger than that of a disadvantaged family background (as reported in the tables).

5.5 Estimation results

5.5.1 Sample analysis

Before analysing the results given by the econometric models, it is useful to check the representativity of our estimation samples. As will be shown in the tables of results, these samples are quite small (around 1500 observations for men and 1700 for women) compared to the data set as a whole (around 5000 observations for each sex). This attrition is due to several phenomena. First, some cohort members or their parents may refuse or omit to answer. This is even more likely to be a problem for this data set as the first three waves include information from various sources (the parents, but also the school and the doctor). Second, some individuals may be missing from follow-up waves, either because they refuse to be further interviewed or because they are not located by the interviewers. The comparatively small number of observations in our sample is therefore due to the fact that we use all the waves and information from all the sources available, so that the likelihood that some observations are missing is large.

This phenomenon is a problem for us if these missing observations are not random but reflect a certain kind of people. We therefore look at the sample means for all our variables and determine whether our sample means strongly deviate from the data set means. These means are in tables C.5.1 and C.5.2 (appendix C). We can see that several variables have means which differ slightly from the whole sample means. They all tend to show that, with respect to these characteristics, individuals in our sample are on average better off. The rest of the means are reasonably close to the data set means. If we look at the means of the variables included in our social exclusion index, we can see that, for both men and women, they are about the same or slightly lower in our samples.

Given this, we probably lose information on the direct and indirect effects of childhood variables on the probability of being socially excluded. It is not straightforward to identify the direction of the bias. However, it is possible that our coefficients are under-estimated. This is because our estimation samples tend to exclude individuals who are socially excluded and at the same time have had a disadvantaged family background. The effects of detrimental factors should be attenuated. Any effect identified as statistically significant is therefore likely to be stronger in the whole data set.

5.5.2 Results from the ordered probit models

Tables 5.2a to 5.4b show the results obtained for men for each of the three indices. Tables 5.2a, 5.3a and 5.4a contain four different specifications starting with only childhood variables then adding education, then including adulthood variables, and finally combining the employment of the mother with marital status, instead of having them as separate variables. Tables 5.2b, 5.3b and 5.4b show the marginal effects corresponding to the coefficients of the statistically significant variables of the last column from the relevant tables. They also contain some predicted probabilities calculated for specific individuals. We can see from the "a" tables that the coefficients are only slightly affected from one index to the next. The method of computation of the indices therefore does not seem to affect the results.

The variables indicative of social behaviour at age 16 are found to have a statistically significant relationship with future probability of social exclusion, even when we control for adulthood characteristics. In particular children who were reported badly behaved by the school are more likely to be socially excluded, with a 5-percentage-point-higher probability of being in the highest category of index 1. Across the three indices, they have a probability of being integrated (in other words,

of being in the 0 category of the indices) around 5- to 7-percentage-points lower. Individuals who were referred to an agency when they were 16 years old suffer the same change in probability; specifically the probability of being integrated is decreased by 7 percentage points across the three indices. Those observed to have bad relations with their parents at 16 are around 4 percentage points less likely to be socially included. We should also note that, contrary to what we found in tables 5.1a and 5.1b, contacts with the police do not have a statistically significant coefficient, the latter being much smaller than the coefficients on the other behaviour variables (numerically, individuals are only 1 to 2 percentage points less likely to be integrated). This result is consistent with Gregg and Machin's (2000) findings; they find that the coefficient on contacts with the police (defined in the same way as here) is not statistically significant in specifications having for dependent variable the individual wage or the probability of employment at 33 years old.

Having a lone non-working mother at 7 is associated with a higher probability of social exclusion. The other variables representing employment of the mother and her marital status during the cohort member's childhood do not have statistically significant coefficients. We find that having a father who experienced unemployment is statistically significant and is associated with a 9 to 10 percentage points decrease in the probability of being integrated compared to having a father who never experienced unemployment.

Other statistically significant results concerning the childhood variables show that having a mother younger than 20 at birth decreases the probability of social exclusion. The size of this effect is slightly bigger than that of bad behaviour at school. This shows that when we control for other aspects of young motherhood such as the possibility of financial difficulties, we find it does not have a disadvantageous

effect. Early observation of lower ability is indicative of future social exclusion, with a 4 to 7 percentage points decrease in the probability of social integration.

As we noted before, the effects just mentioned are robust to the inclusion of adulthood variables. Education variables (see columns 3 and 4) appear statistically significant and with the expected sign. Having any qualification decreases the probability of social exclusion compared to having none. Looking at the changes in predicted probability, we see that qualifications are particularly important in preventing "extreme" cases of social exclusion. For index 1 for example, they all decrease probability of being in the highest category of social exclusion by around 5 percentage points compared to having no qualification.

We find that those who have a partner who works when they are 23 years old are less likely to be socially excluded in the following years. Manual workers (except skilled manuals) are more at risk of social exclusion than others, so are those who have living children by the age of 23 years old. These results indicate that even controlling for financial difficulties and education, people from lower classes are more likely to be socially excluded; once one has a bad start in adult life one seems more likely to drift further. Finally, men coming from London appear to be more at risk of social exclusion; they are more than 10 percentage points less likely to be integrated compared to men living in the South-East.

Tables 5.5a to 5.7b show the equivalent specifications for women. We again find very similar results across the three indices. In the most parsimonious specification the behavioural variables are all statistically significant and indicate a higher probability of social exclusion (except for index 3 for which only referral to an agency is statistically significant). All of these, except referral to an agency, lose their statistical significance once we add the education variables. Referral then loses significance when we add adulthood characteristics, except for index 1. As for men,

having had contacts with the police at 16 years old is not statistically significant. The employment of the mother during an individual's childhood appears to be statistically significant for women while it was not for men. There is some evidence (columns 1 to 3) that 11-year-old girls who have a working mother have a higher probability of being socially excluded in adulthood. The effect disappears when the child is 16 years old. There is also evidence that having no father or male head in the household decreases the probability of social exclusion. The combined variables (column 4) show that for indices 2 and 3, having a working single mother at 11 decreases this probability, compared to a household with two working parents, such a family situation increases the probability of being socially integrated by around 15-18 percentage points. Education variables are statistically significant; we observe that O levels become insignificant once we introduce the adulthood variables, all the other qualifications keep their significance. Finally, contrary to what we found for men, having had an unemployed father does not appear to be statistically significant.

Several additional determinants are found to be statistically significant compared to what we found for men. Women who were in intact families for the whole of their childhood are less likely to be socially excluded (with a 9 to 13 percentage points increase in the probability of being integrated depending on the index). Those who have a relative who had contacts with the authorities are more likely to be. The change in the probability of being integrated is quite big (from 17 to 23 percentage points depending on the index), but this result is based on very few observations (only 19 women were in that situation).

Among the adulthood variables, having children by the age of 23 is found to increase the probability of social exclusion but is statistically insignificant except for index 2. This may be explained by the fact that women are in general in partnerships with older men, who may already have a good social status. In the whole data set, we

indeed observe that the average age of the partner at the last birthday is older for women (26.3 years) than for men (22.5 years). In the same way, we find that, as for men, having a partner who works is beneficial (increasing the probability of being integrated by 5 to 6 percentage points), but also that having a partner out of the labour force or unemployed increases the risk of social exclusion (decreasing the probability of integration by 9 to 13 percentage points). This may show that women who have a partner in that situation are in disadvantaged households, while it is more common for men to have a partner out of the labour force (in our estimation samples, while 14 percent of men have a partner who is not employed, only 4 percent of women do). As for men, unskilled and semi-skilled manual workers are more at risk of social exclusion. Finally, women's outcomes are more sensitive to the region in which they live. Women in the East Midlands, London and Scotland appear to be more at risk of social exclusion (more than 10 percentage points less likely to be integrated) compared to those living in the South East.

It is useful at this stage to summarise the main results. First, we find that the method of computation of the indices does not affect the main results. Second, anti-social behaviour at 16 years old is statistically significantly related to future social exclusion, in particular for men for whom the coefficients remain statistically significant even when we include early adulthood characteristics. Individuals who have been referred to an agency because of difficulties which have affected their educational progress or behaviour are also more likely to be socially excluded during their adulthood. The experience of having an unemployed father is associated with statistically significant higher probability of social exclusion only for men. For women, it appears that those who had a non-working mother living in couple or a working lone mother when they were 11 years old are less likely to be socially excluded. Education is statistically significant for women and men and appears to

offset such effects as those of bad social behaviour earlier in life. Having a working partner as opposed to no partner "protects" from future exclusion for both men and women, while having a partner unemployed or out of the labour force is detrimental only for women. Finally, people living in London are much more at risk of being socially excluded.

The questions which interest us here are the extent to which family background and adolescent anti-social behaviour affect the probability of becoming socially excluded, and what other factors could offset these negative influences. If we look at the bottom parts of tables 5.2b, 5.3b and 5.4b, we see that having a unfavourable family background (defined as having had a father unemployed and financial difficulties at least once) is less damaging (in terms of social exclusion) than having had an anti-social behaviour (defined as having reported by the parents and the school, and having had contacts with the police and social agencies at 16 years old). The predicted probability of being integrated is more reduced for anti-social teenagers than for those who had an unfavourable family background. Consistently with Gregg and Machin (2000), we find that educational attainment has an offsetting effect. However, it is quite limited in our specifications. The probability of being integrated is increased by only 4 to 7 percentage points for those who have a degree compared to those who have no education. Finally, we see that those who had difficulties during youth are better off when they have a partner (in particular if the partner works), but again, this beneficial effect is quite small (of the order of about 4 percentage points for those whose partner works).

For women (tables 5.5b, 5.6b and 5.7b), we see that the effect of any childhood difficulties is smaller than for men. Moreover, we observe the same pattern as what we just described for men. The only difference is that women who had difficulties and who have a partner who does not work are less likely to be socially

integrated compared to those who do not have one (the predicted probability is reduced by about 7 to 9 percentage points).

5.5.3 Sensitivity of the results to the definition of the index of social exclusion

It is interesting to check whether the results outlined in the previous section are sensitive to our definition of social exclusion. In particular, we want to see whether they are affected by the exclusion of two particular variables: owning a car and having been unemployed. The former variable may drive results such as the significance of regional dummies, while the latter may dominate the index and drive all the results. We re-estimate the least parsimonious specification for all three indices in each of these two cases. The results are shown in tables 5.8a and 5.9a for men and in tables 5.8b and 5.9b for women.

Table 5.8a shows that the results are overall similar to what was found before for men. In particular, the London effect is not driven by the "owning a car" variable, although the coefficient is slightly decreased.

For women (table 5.8b), the London effect is still statistically significant but the other regional dummies lose significance and become smaller. We note that having a working partner at 23 years old becomes statistically insignificant and has a coefficient close to zero. This leads us to think that living in a household which owns a car is very much related to the work of the partner as far as women are concerned. The results for women appear somewhat more affected by the exclusion of "owning a car" than the results for men were.

From table 5.9a, we can see that for men the coefficient on having a working partner becomes statistically insignificant and smaller. It is interesting to note that the labour market situation of the partner has become statistically insignificant; it seems

to be related only to the labour market situation of the cohort member and not to other manifestations of social exclusion. This is consistent with the idea that men who have a working partner when they are 23 years old are very likely to be in secure jobs themselves and unlikely to suffer from unemployment. We should also note that the coefficient on the unemployment of the father is still statistically significant. This shows that parental unemployment is not only associated with higher probability of unemployment but also with higher probability of other social and economic difficulties. The effect of having a lone non-working mother at 7 becomes insignificant (except for index 1).

For women (see table 5.9b), having a partner who does not work becomes statistically insignificant (except for index 2), while having a partner who works is still negative and statistically significant. It appears that the former effect is mainly related to the cohort member's unemployment rather than *full* social exclusion. The coefficient on having a non-working mother at 11 becomes statistically insignificant but is still negative. Father's unemployment is still statistically insignificant.

Results for men appear robust to these sensitivity tests, while results for women are slightly less robust. Overall, however, the main conclusions that we drew from previous analysis are not contradicted by the tests.

5.5.4 Separation of the index between poverty and cultural variables

Given that our indices include two very different aspects of exclusion from society and that in particular they contain implicitly poverty, we may not be convinced that the determinants we have identified are really concerned with social exclusion and not simply with poverty. We therefore construct two indices; one includes variables indicative of economic difficulties and one indicative of cultural

difficulties.[13] The results are interesting in that they give us a better understanding of the determinants of social exclusion. We note that the pairwise correlation coefficients are higher among the variables indicative of economic difficulties than among those indicative of cultural exclusion. For both men and women, the first component explains around 30 per cent (36 per cent) of the total variance of the economic variables (cultural variables).

The results are in tables 5.10a and 5.10b for men and 5.11a and 5.11b for women. We see that the results are similar across the three types of indices,[14] but that the economic and cultural indices have different determinants. Women appear to be less likely to be socially excluded. We calculated the predicted probabilities at the means of the variables, and we found that men have a 56 percent probability of being socially (i.e. economically and culturally) integrated, while women have a 61 percent probability of being economically integrated and a 76 percent probability of being culturally integrated.

In table 5.10a, we observe that all the determinants that we identified in the previous sections are still statistically significant. However they can be separated into three groups: those which affect economic exclusion, those which affect cultural exclusion and those which affect both. The results show that economic variables, such as having had a father unemployed during childhood, a lone non-working mother at 7 and having a working partner, mainly affect economic outcomes (respectively increasing and decreasing the probability). Similarly, social variables (for example mother's age at delivery or social behaviour at school) are determinants of the cultural

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[13] The economic index contains having been homeless, unemployed, owning a phone, a car and having rent arrears. The cultural index includes the rest of the variables, namely voting behaviour, writing problems and drinking problems.

[14] The correlation between the indices constructed from a well-being equation and through a principal component analysis is again high. The correlation coefficients are around 0.93 and 0.89 for the economic indices (1a and 2a) and the cultural indices (1b and 2b) respectively.

part of exclusion. Several findings are interesting to outline. First, boys who have a lone non-working mother when they are 7 are more likely to be economically excluded. Second, qualifications and ability (measured by test scores) seem to be more important, in terms of size of effect and statistical significance, for cultural factors. Any qualification increases the probability that people are integrated in terms of cultural activity. Third, having parents who do not own their house appears detrimental only for economic outcomes, while the opposite is true for cultural outcomes. This seems to show that the detrimental effects of living in rented accommodation do not spread to full social integration. Fourth, we find that bad social behaviour observed at school is correlated with future cultural exclusion while behaviour observed at home is linked to future economic exclusion. Fifth, unskilled and semi-skilled manual workers appear to be more likely to be fully (i.e. economically and culturally) excluded compared to non-manuals. Skilled manuals are only more likely to be culturally excluded. Finally, having children by the age of 23 impairs economic integration only.

Overall, looking at the predicted probabilities (table 5.12a[15]), those who have had an anti-social behaviour and family difficulties see a greater decrease in the probability of economic integration than in the probability of cultural integration compared to those who did not suffer from those difficulties. Taking index 1 as an example, the former probability is decreased by 33 percentage points, while the latter is decreased by 13 percentage points. Education offsets these negative effects especially for cultural integration. For those who had difficulties, having a partner decreases economic exclusion compared to having no partner, even if their partner does not work. For them, the probability of cultural exclusion slightly increases if the partner does not work.

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[15] Only the results for index 1 are reported; the other indices show similar results.

For women (tables 5.11a and 5.11b), the determinants are different from what we found for men. Having had a relative in contact with the police increases the probability of both cultural and economic exclusion, while having children by the age of 23 years old increase the probability of economic exclusion but decreases the probability of cultural exclusion. We again find that the family structure is more relevant for women than for men; having lived continuously with both natural parents is beneficial against future economic exclusion. This is consistent with findings in the sociological literature that girls are more affected by living in a reconstituted family (Hetherington et al. 1998). Having a non-working married mother at age 7 and 16 appears detrimental for future economic integration but beneficial if it happens at age 11. Having a lone non-working mother at 7 is detrimental to cultural integration.

Looking at the offsetting effects of education and having a partner, we see that educational qualifications are associated with higher probabilities of being integrated economically and particularly culturally. Compared to women who do not have a partner and had anti-social behaviour and family difficulties, those who have a non-working partner have a higher probability of being economically excluded and a slightly lower probability of being culturally excluded. For example for index 1, the probability that a women is in the highest economic exclusion category is increased by 10 percentage points, while the probability that a women is in the highest cultural exclusion category is decreased by 2 percentage points. Those who had difficulties during childhood and have a partner who works are less likely to be socially excluded.

5.6 Conclusion

We have found that anti-social behaviour and social difficulties during childhood are associated with later risks of social exclusion. These results hold when controlling for given personal characteristics such as ability and temperament

(measured by social behaviour) and for the current environment (measured by regional dummies). Educational qualifications appear to provide offsetting effects, especially for women. We have also found that outcomes in early adulthood (namely at age 23) are related to future social exclusion. Being in a "disadvantageous" situation at 23 years old appears to be associated with higher probability of social exclusion in the following years. What we called economic and cultural indices of integration are determined by slightly different factors.

We can conclude that there is a certain degree of intergenerational transfer of difficulties. Social exclusion, which is generally viewed as the result of particular circumstances, is shown here to affect certain categories of people; in other words, people who suffered from social difficulties during their childhood are more at risks of social exclusion during adulthood. Compared with the studies of Gregg and Machin (2000) and Hobcraft (1998), we bring complementary results consistent with the idea that childhood difficulties have a persistent association with subsequent economic success in Britain. We provide the following additional insights. We study the effect of the employment and the marital status of the mother; we find weak evidence of long-term effects, and only for women. We also include an essential dimension to social exclusion: the partnership situation. The results show that having a partner is beneficial, except for women whose partner does not work.

We provide a new composite index of social exclusion which appears to be quite robust to computational methods. It gives a better idea of the overall likelihood that individuals become socially excluded.

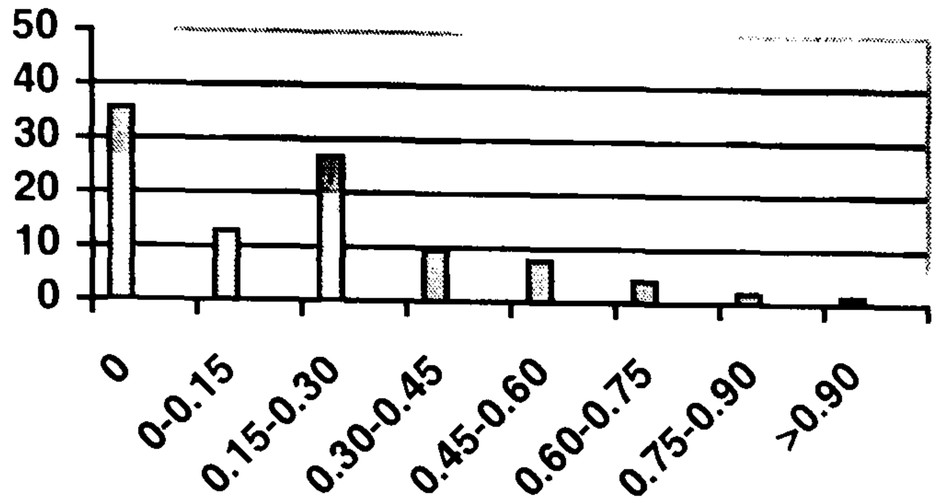
In addition to the effect of financial difficulties, it appears that children who suffer from exclusion from social activities (through their parents' exclusion) are more likely to be themselves socially excluded when they are adults. This is consistent with the idea that, in addition to obvious issues of financial deprivation, a

lack of social interaction has longer-term consequences. If we apply this to the particular case of unemployment and long-term unemployment, there is some evidence that people who suffer psychologically from unemployment may pass on to their children characteristics which increase their probability of being socially excluded. Educational and work achievements as well as partnerships are found to offset childhood disadvantages. They do not however appear to be sufficient in preventing the combined detrimental effects of difficult family background and adolescent anti-social behaviour. For women, it appears that family structure is also relevant; those who have spent their childhood in an intact family fare better than others. This is a problematic result as more and more families are reconstituted.

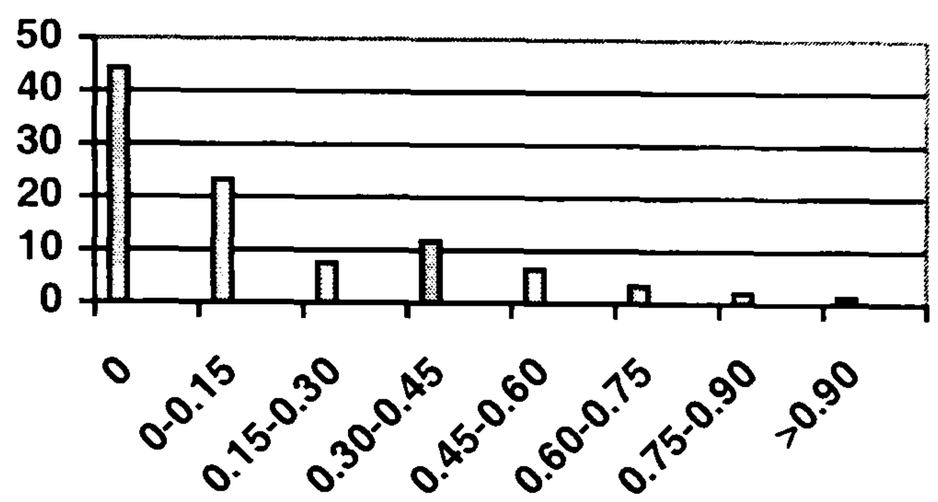
If we combine these results with those of the previous chapter, we can argue that unemployment has direct and indirect associations with social exclusion. The former have been identified for economic exclusion of men and the latter work through the unemployment's influence on adolescent social behaviour. Distinguishing between economic and cultural integration, we find that, for men, economic family background is indirectly linked to cultural integration and both indirectly and directly to economic integration. For women, economic family background influences economic and cultural integration both directly and indirectly, although father's unemployment does not have a direct effect on exclusion. Our conclusion that giving parenting guidance may be able to improve children's outcomes can therefore be extended to future (adult) outcomes.

Graphs of the index distribution[16]

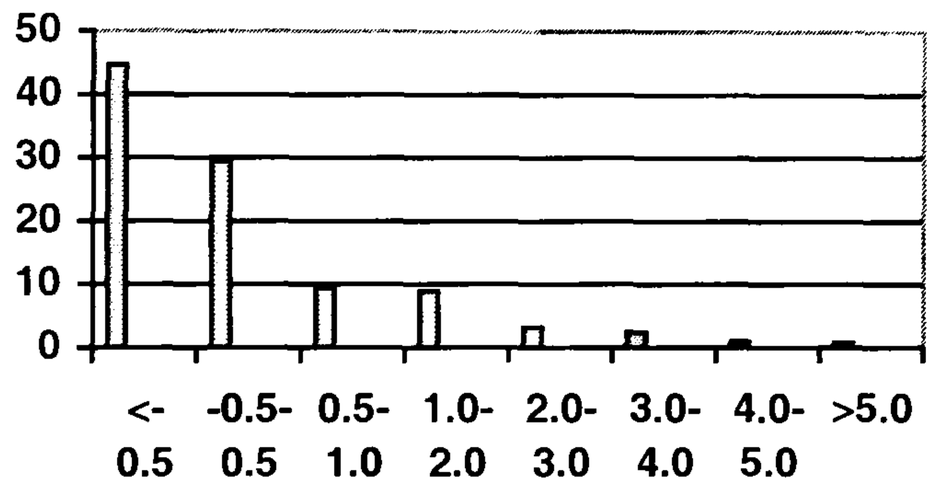
Graph 5.1
Males (index 1)



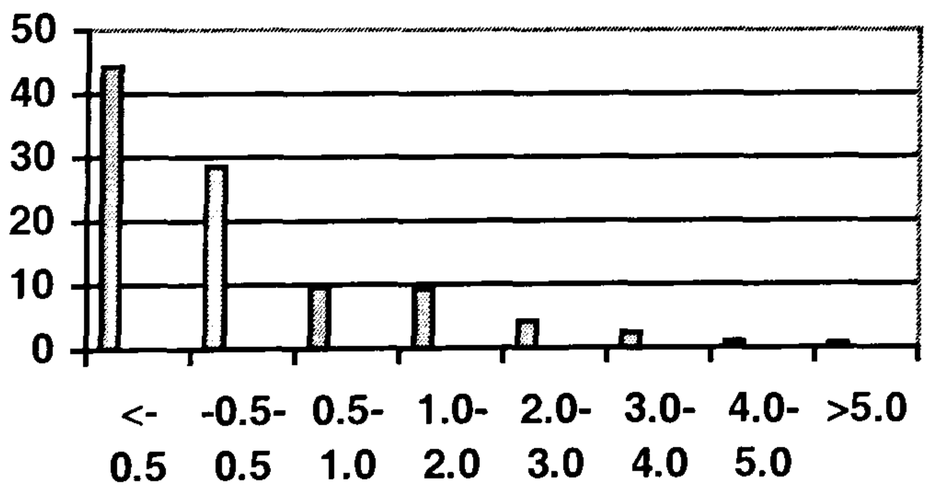
Graph 5.2
Females (index 1)



Graph 5.3
Males (index 2)



Graph 5.4
Females (index 2)



[16]For example, for around 35 percent of men index 1 is equal to zero.

Table 5.1a: Childhood characteristics and social exclusion (men, part I).

	No vote		No Car		Homeless		Unemployed	
	Obs.	Mean	Obs.	Mean	Obs.	Mean	Obs.	Mean
All	5576	0.249	5541	0.152	5585	0.036	5498	0.293
No educational qualifications	3405	0.255	3387	0.155	3409	0.030	3347	0.293
Degree	530	0.170	521	0.104	530	0.042	525	0.255
Father unemployed once	2844	0.257	2819	0.161	2848	0.039	2802	0.307
Above average in maths	2221	0.234	2202	0.123	2223	0.038	2186	0.273
Bad behaviour (school)	1520	0.293	1508	0.190	1521	0.053	1485	0.349
Referred to an agency	672	0.324	668	0.265	673	0.059	650	0.418
Contacts with police	599	0.331	598	0.256	599	0.063	582	0.435
No father (sweep 3)	252	0.246	250	0.200	252	0.060	246	0.390
Mother work (sweep 3)	2726	0.231	2706	0.139	2727	0.039	2689	0.289

Table 5.1b: Childhood characteristics and social exclusion (men, part II).

	Pb. writing		No phone		Alcohol pbs.		Arrears	
All	5536	0.116	5531	0.077	5570	0.171	5555	0.079
No educational qualifications	3379	0.135	3381	0.086	3398	0.165	3389	0.087
Degree	530	0.036	526	0.013	531	0.156	528	0.019
Father unemployed once	2823	0.125	2821	0.079	2839	0.180	2831	0.087
Above average in maths	2207	0.063	2201	0.051	2223	0.186	2213	0.066
Bad behaviour (school)	1512	0.151	1501	0.113	1518	0.194	1515	0.101
Referred to an agency	660	0.205	662	0.160	671	0.215	671	0.136
Contacts with police	592	0.174	590	0.158	598	0.232	597	0.127
No father (sweep 3)	248	0.141	248	0.125	253	0.194	249	0.088
Mother work (sweep 3)	2706	0.104	2698	0.067	2722	0.173	2717	0.078

Table 5.1c: Childhood characteristics and social exclusion (women, part I).

	No vote		No Car		Homeless		Unemployed	
All	5763	0.215	5721	0.150	5778	0.040	5688	0.225
No educational qualifications	3294	0.232	3256	0.168	3303	0.039	3257	0.218
Degree	485	0.113	486	0.086	487	0.043	482	0.224
Father unemployed once	2907	0.217	2882	0.164	2914	0.041	2861	0.222
Above average in maths	2787	0.189	2767	0.117	2793	0.042	2752	0.227
Bad behaviour (school)	1386	0.259	1370	0.199	1391	0.055	1367	0.218
Referred to an agency	477	0.273	471	0.259	482	0.062	466	0.234
Contacts with police	228	0.289	223	0.215	228	0.088	224	0.263
No father (sweep 3)	312	0.215	309	0.188	313	0.042	307	0.231
Mother work (sweep 3)	2806	0.211	2783	0.130	2810	0.041	2784	0.223

Table 5.1d: Childhood characteristics and social exclusion (women, part II).

	Pb. writing		No phone		Alcohol pbs.		Arrears	
All	5744	0.061	5730	0.072	5747	0.079	5749	0.078
No educational qualifications	3279	0.075	3281	0.089	3282	0.072	3278	0.089
Degree	486	0.004	480	0.006	486	0.119	486	0.021
Father unemployed once	2899	0.063	2892	0.080	2903	0.082	2905	0.085
Above average in maths	2780	0.032	2765	0.053	2781	0.084	2781	0.065
Bad behaviour (school)	1378	0.090	1380	0.117	1384	0.096	1384	0.112
Referred to an agency	474	0.156	476	0.189	477	0.119	481	0.143
Contacts with police	227	0.145	225	0.169	228	0.101	227	0.137
No father (sweep 3)	309	0.058	310	0.106	312	0.115	310	0.103
Mother work (sweep 3)	2796	0.055	2795	0.057	2799	0.079	2798	0.075

Table 5.2a: Ordered probit model with index 1 of social exclusion (men).

	Childhood only	+ education	+ adulthood	Same,combined
Childhood family background				
Teenage mother	-0.153*	-0.176*	-0.231**	-0.223**
	(0.095)	(0.096)	(0.107)	(0.107)
Father left school after 15	-0.004	0.0004	0.010	0.004
	(0.071)	(0.073)	(0.082)	(0.082)
Mother left school after 15	-0.027	-0.017	-0.020	-0.015
	(0.069)	(0.071)	(0.077)	(0.078)
Relative in contact with police (by 11)	0.168	0.130	0.117	0.115
	(0.353)	(0.346)	(0.360)	(0.362)
Parents were tenants (16)	0.120**	0.106*	0.086	0.090
	(0.055)	(0.056)	(0.062)	(0.062)
Some parental incentive for school	0.008	0.024	-0.022	-0.028
	(0.133)	(0.133)	(0.149)	(0.150)
Large parental incentive for school	-0.107	-0.061	-0.072	-0.076
	(0.125)	(0.125)	(0.141)	(0.142)
Always lived with both natural parents	-0.097	-0.119	-0.070	-0.053
	(0.121)	(0.119)	(0.133)	(0.134)
Family were at risk of financial difficulties	0.300	0.315	0.123	0.130
	(0.250)	(0.246)	(0.282)	(0.281)
Family had financial difficulties once or more	0.033	0.019	0.017	0.022
	(0.081)	(0.082)	(0.090)	(0.090)
Father was at risk of unemployment	0.118	0.127	0.109	0.113
	(0.085)	(0.087)	(0.091)	(0.092)
Father was unemployed once or more	0.284**	0.298**	0.321**	0.318**
	(0.092)	(0.093)	(0.104)	(0.104)
Non-working mother in couple (7)				0.023
				(0.065)
Lone working mother (7)				-0.487
				(0.340)
Lone non-working mother (7)				0.444*
				(0.242)
Non-working mother in couple (11)				-0.030
				(0.068)
Lone working mother (11)				-0.022
				(0.299)
Lone non-working mother (11)				0.024
				(0.393)
Non-working mother in couple (16)				0.019
				(0.070)
Lone working mother (16)				-0.253
				(0.237)
Lone non-working mother (16)				-0.260
				(0.279)
Mother works (7)	-0.015	-0.013	-0.033	
	(0.058)	(0.059)	(0.064)	
Mother works (11)	0.017	0.009	0.032	
	(0.062)	(0.062)	(0.067)	
Mother works (16)	-0.005	-0.005	-0.021	
	(0.061)	(0.062)	(0.069)	
Single mother (7)	-0.336	-0.271	-0.227	
	(0.247)	(0.243)	(0.257)	
Single mother (11)	0.126	0.082	-0.021	
	(0.223)	(0.224)	(0.248)	
Single mother (16)	-0.253	-0.283	-0.287	
	(0.179)	(0.179)	(0.201)	
Childhood personal characteristics				
Above average at maths test score (7)	0.030	0.037	0.046	0.045
	(0.057)	(0.058)	(0.064)	(0.064)
Above average at reading test score (7)	-0.071	-0.055	-0.071	-0.069
	(0.066)	(0.067)	(0.073)	(0.073)
Quick to settle (7)	-0.039	-0.026	-0.029	-0.033
	(0.057)	(0.058)	(0.062)	(0.062)
Reported once below average knowledge	0.036	-0.002	-0.015	-0.018
	(0.071)	(0.073)	(0.080)	(0.080)
Reported twice below average knowledge	0.250**	0.149*	0.128	0.128
	(0.094)	(0.097)	(0.104)	(0.104)
Has been in care	0.250*	0.202	0.230	0.206
	(0.176)	(0.179)	(0.196)	(0.200)
Reported badly behaved by school (16)	0.247**	0.196**	0.213**	0.212**
	(0.059)	(0.060)	(0.065)	(0.065)

Table 5.2a (ctd.)

Reported badly behaved by mother (16)	0.097*	0.088*	0.092*	0.093*
	(0.052)	(0.053)	(0.058)	(0.058)
Referred to a social agency (16)	0.236**	0.234**	0.210*	0.210*
	(0.103)	(0.105)	(0.119)	(0.119)
Had contacts with the police (16)	0.054	0.043	0.064	0.068
	(0.096)	(0.097)	(0.106)	(0.106)
Adulthood personal characteristics (at 23)				
Professional & intermediate			-0.093	-0.097
			(0.099)	(0.099)
Skilled manuals			0.040	0.034
			(0.084)	(0.084)
Other manuals			0.324**	0.321**
			(0.104)	(0.104)
Has children			0.207*	0.204*
			(0.113)	(0.114)
Other education		-0.121	-0.086	-0.081
		(0.110)	(0.128)	(0.128)
O levels/ Lower vocational		-0.308**	-0.170	-0.171
		(0.107)	(0.121)	(0.122)
5+ O levels/ Middle vocational		-0.392**	-0.246**	-0.242**
		(0.111)	(0.125)	(0.125)
A levels		-0.325**	-0.192	-0.183
		(0.137)	(0.159)	(0.160)
Highest vocational		-0.432**	-0.221	-0.218
		(0.132)	(0.145)	(0.145)
Degree		-0.358**	-0.192	-0.186
		(0.144)	(0.168)	(0.168)
Adulthood family background (at 23)				
Partner working			-0.171**	-0.168**
			(0.067)	(0.067)
Partner unemployed or OLF			-0.054	-0.043
			(0.120)	(0.120)
Region of residence at 33				
North	0.128	0.114	0.027	0.027
	(0.105)	(0.106)	(0.114)	(0.114)
North West	-0.028	-0.034	-0.048	-0.055
	(0.104)	(0.107)	(0.117)	(0.117)
Yorkshire & Humberside	0.169*	0.171*	0.154	0.152
	(0.096)	(0.097)	(0.104)	(0.104)
West Midlands	0.035	0.028	0.006	0.012
	(0.102)	(0.104)	(0.114)	(0.114)
East Midlands	0.075	0.071	0.093	0.093
	(0.107)	(0.107)	(0.118)	(0.118)
East Anglia	-0.188	-0.215	-0.299*	-0.297*
	(0.122)	(0.122)	(0.140)	(0.140)
South West	-0.072	-0.087	-0.150	-0.147
	(0.101)	(0.101)	(0.111)	(0.111)
London	0.409**	0.406**	0.368**	0.360**
	(0.128)	(0.131)	(0.141)	(0.142)
Wales	0.227**	0.204*	0.141	0.139
	(0.113)	(0.113)	(0.122)	(0.121)
Scotland	0.013	0.006	0.014	0.012
	(0.099)	(0.100)	(0.109)	(0.109)
$\mu 1$	-0.209	-0.514	-0.385	-0.353
	(0.200)	(0.218)	(0.248)	(0.251)
$\mu 2$	0.258	-0.045	0.111	0.143
	(0.200)	(0.219)	(0.249)	(0.252)
$\mu 3$	0.666	0.369	0.501	0.535
	(0.200)	(0.219)	(0.249)	(0.252)
$\mu 4$	1.306	1.013	1.139	1.173
	(0.201)	(0.219)	(0.249)	(0.252)
Number of observations	1872	1846	1590	1590
Pseudo R^2	0.0319	0.0365	0.0446	0.0452
Pseudo-functional form	$\chi^2(3)=1.901$	$\chi^2(3)=1.205$	$\chi^2(3)=0.518$	$\chi^2(3)=0.692$
Normality	$\chi^2(2)=3.365$	$\chi^2(2)=3.140$	$\chi^2(2)=3.547$	$\chi^2(2)=2.797$
Heteroscedasticity	$\chi^2(38)=39.911$	$\chi^2(44)=48.897$	$\chi^2(50)=62.370$	$\chi^2(53)=66.738$

Notes:

(1) All childhood variables refer to the period between 7 and 16 years old unless the age is specified in brackets.

(2) Coefficients with a star are statistically significant at 10% or with a ratio>1.5, at 5% with two stars. Robust standard errors in brackets.

(3) Test results in bold means the tests fail.

Table 5.2b: Changes in predicted probabilities index 1 (men).

Prob(index 1) =	0 social integration	1	2	3	4 Max. social exclusion
Childhood family background					
Teenage mother	8.17	0.66	-0.93	-3.15	-4.75
Relative in contact with police (by 11)	-3.95	-0.64	0.25	1.48	2.86
Parents tenants when (16)	-3.17	-0.41	0.27	1.21	2.11
Always lived with both natural parents	1.85	0.26	-0.14	-0.70	-1.26
Father was at risk of unemployment	-4.06	-0.46	0.39	1.56	2.57
Father was unemployed once or more	-10.79	-1.82	0.61	4.01	7.99
Couple, only male working (11)	1.07	0.14	-0.09	-0.41	-0.71
Single mother working (11)	0.78	0.10	-0.07	-0.30	-0.52
Single mother not working (11)	-0.83	-0.12	0.06	0.31	0.57
Childhood personal characteristics					
Reported once below average knowledge (by 11)	0.63	0.07	-0.06	-0.24	-0.40
Reported below average knowledge at 7 and 11	-4.42	-0.69	0.29	1.67	3.15
Reported badly behaved by school (16)	-7.40	-1.04	0.57	2.81	5.07
Reported badly behaved by mother (16)	-3.27	-0.42	0.28	1.25	2.17
Referred to a social agency (16)	-7.12	-1.22	0.39	2.65	5.29
Had contacts with the police (16)	-2.37	-0.34	0.18	0.90	1.63
Adulthood personal characteristics (at 23)					
Professional & intermediate	3.58	0.25	-0.43	-1.39	-2.02
Skilled manuals	-1.24	-0.13	0.12	0.48	0.77
Other manuals	-10.70	-2.00	0.47	3.92	8.30
Other qualification	2.72	0.51	-0.12	-1.01	-2.10
Olevels/Lower vocational	5.86	0.94	-0.37	-2.20	-4.24
5+ Olevels/Middle vocational	8.43	1.18	-0.64	-3.19	-5.78
A levels	6.31	0.99	-0.41	-2.37	-4.52
Highest vocational	7.56	1.11	-0.54	-2.86	-5.27
Degree	6.40	1.00	-0.42	-2.41	-4.57
Has children	-6.96	-1.16	0.41	2.60	5.11
Adulthood family background (at 23)					
Partner working	6.04	0.65	-0.59	-2.32	-3.78
Partner unemployed or OLF	1.51	0.22	-0.11	-0.57	-1.04
Region of residence at 33					
East Midlands	-3.25	-0.45	0.25	1.24	2.21
London	-11.63	-2.50	0.26	4.14	9.73
Scotland	-0.44	-0.05	0.04	0.17	0.28
Predicted base probability (at the means)	0.311	0.190	0.152	0.196	0.151
Base person 1	0.430	0.196	0.136	0.150	0.089
Base person 1, anti-social behaviour	0.224	0.173	0.155	0.227	0.221
Base person 1, family difficulties	0.303	0.189	0.153	0.199	0.156
Anti-social behaviour, family difficulties	0.136	0.138	0.143	0.249	0.334
Base person 2	0.376	0.196	0.145	0.171	0.113
Base person 2, anti-social behaviour, family difficulties	0.108	0.121	0.134	0.25	0.387
Anti-social behaviour, family difficulties, degree	0.146	0.143	0.146	0.248	0.318
Anti-social behaviour, family difficulties, middle vocational	0.159	0.149	0.148	0.245	0.299
Base person 3	0.412	0.196	0.139	0.157	0.096
Base person 3, anti-social behaviour, family difficulties	0.126	0.132	0.14	0.25	0.351
Anti-social behaviour, family difficulties, partner works	0.165	0.151	0.149	0.244	0.291
Anti-social behaviour, family difficulties, partners does not work	0.136	0.137	0.143	0.249	0.335

See notes below

Table 5.3a: Ordered probit model with index 2 of social exclusion (men).

	Childhood only	+ education	+ adulthood	Same,combined
Childhood family background				
Teenage mother	-0.148*	-0.164*	-0.232**	-0.219**
	(0.095)	(0.097)	(0.109)	(0.109)
Father left school after 15	-0.025	-0.019	0.008	0.002
	(0.068)	(0.070)	(0.080)	(0.080)
Mother left school after 15	-0.063	-0.053	-0.064	-0.057
	(0.068)	(0.069)	(0.076)	(0.076)
Had a relative in contact with police (by 11)	0.313	0.272	0.289	0.296
	(0.388)	(0.381)	(0.401)	(0.403)
Parents were tenants (16)	0.153**	0.138**	0.105*	0.111*
	(0.056)	(0.056)	(0.062)	(0.062)
Some parental incentive for school	0.042	0.058	0.0004	-0.005
	(0.132)	(0.132)	(0.145)	(0.145)
Large parental incentive for school	-0.069	-0.023	-0.044	-0.046
	(0.122)	(0.123)	(0.136)	(0.137)
Always lived with both natural parents	-0.070	-0.096	-0.057	-0.036
	(0.119)	(0.117)	(0.130)	(0.131)
Family were at risk financial difficulties	0.242	0.250	0.083	0.095
	(0.253)	(0.247)	(0.301)	(0.300)
Family had financial difficulties once or more	0.074	0.054	0.040	0.046
	(0.082)	(0.083)	(0.091)	(0.091)
Father was at risk unemployed	0.052	0.066	0.082	0.090
	(0.081)	(0.083)	(0.090)	(0.090)
Father was unemployed once or more	0.244**	0.259**	0.301**	0.295**
	(0.092)	(0.093)	(0.105)	(0.105)
Non-working mother in couple (7)				0.001
				(0.064)
Lone working mother (7)				-0.509
				(0.343)
Lone non-working mother (7)				0.581**
				(0.293)
Non-working mother in couple (11)				0.014
				(0.068)
Lone working mother (11)				-0.032
				(0.321)
Lone non-working mother (11)				0.342
				(0.384)
Non-working mother in couple (16)				0.019
				(0.070)
Lone working mother (16)				-0.219
				(0.249)
Lone non-working mother (16)				-0.286
				(0.290)
Mother works (7)	-0.015	-0.005	-0.012	
	(0.058)	(0.058)	(0.064)	
Mother works (11)	-0.018	-0.035	-0.014	
	(0.062)	(0.062)	(0.068)	
Mother works (16)	-0.010	-0.003	-0.020	
	(0.061)	(0.062)	(0.068)	
Single mother (7)	-0.258	-0.184	-0.210	
	(0.259)	(0.260)	(0.265)	
Single mother (11)	0.218	0.167	0.038	
	(0.234)	(0.238)	(0.266)	
Single mother (16)	-0.253	-0.286*	-0.281	
	(0.188)	(0.191)	(0.211)	
Childhood personal characteristics				
Above average at maths test score (7)	0.044	0.053	0.067	0.068
	(0.057)	(0.058)	(0.063)	(0.063)
Above average at reading test score (7)	-0.105*	-0.085	-0.088	-0.085
	(0.065)	(0.067)	(0.073)	(0.073)
Quick to settle (7)	-0.067	-0.057	-0.058	-0.063
	(0.058)	(0.058)	(0.063)	(0.063)
Reported once below average knowledge	0.086	0.038	0.012	0.009
	(0.071)	(0.073)	(0.081)	(0.081)
Reported twice below average knowledge	0.366**	0.252**	0.226**	0.226**
	(0.095)	(0.098)	(0.105)	(0.105)
Has been in care	0.198	0.149	0.181	0.140
	(0.178)	(0.181)	(0.206)	(0.209)
Reported badly behaved by school (16)	0.209**	0.146**	0.141**	0.137**
	(0.058)	(0.059)	(0.064)	(0.065)

Table 5.3a (ctd.)

Reported badly behaved by mother (16)	0.123**	0.119**	0.119**	0.119**
	(0.052)	(0.053)	(0.057)	(0.057)
Referred to a social agency (16)	0.248**	0.247**	0.186*	0.184*
	(0.102)	(0.103)	(0.116)	(0.116)
Had contacts with the police (16)	0.024	0.005	0.029	0.036
	(0.095)	(0.095)	(0.104)	(0.104)
Adulthood personal characteristics (at 23)				
Professional & intermediate			-0.049	-0.053
			(0.097)	(0.097)
Skilled manuals			0.030	0.023
			(0.083)	(0.083)
Other manuals			0.396**	0.394**
			(0.105)	(0.105)
Has children			0.284**	0.280**
			(0.117)	(0.117)
Other education		-0.142	-0.169	-0.165
		(0.110)	(0.128)	(0.128)
O levels/ Lower vocational		-0.329**	-0.232*	-0.238*
		(0.108)	(0.123)	(0.123)
5+ O levels/ Middle vocational		-0.476**	-0.373**	-0.372**
		(0.109)	(0.124)	(0.124)
A levels		-0.400**	-0.295*	-0.288*
		(0.137)	(0.159)	(0.160)
Highest vocational		-0.467**	-0.311**	-0.313**
		(0.132)	(0.145)	(0.146)
Degree		-0.433**	-0.357**	-0.357**
		(0.139)	(0.163)	(0.164)
Adulthood family background (at 23)				
Partner working			-0.147**	-0.143**
			(0.066)	(0.066)
Partner unemployed or OLF			-0.089	-0.073
			(0.120)	(0.120)
Region of residence at 33				
North	0.144	0.129	0.045	0.044
	(0.104)	(0.105)	(0.115)	(0.115)
North West	0.020	-0.014	-0.005	-0.014
	(0.107)	(0.110)	(0.119)	(0.119)
Yorkshire & Humberside	0.172*	0.161*	0.140	0.136
	(0.094)	(0.094)	(0.101)	(0.101)
West Midlands	0.038	0.025	-0.001	0.005
	(0.099)	(0.101)	(0.111)	(0.111)
East Midlands	0.181	0.176*	0.201*	0.200*
	(0.111)	(0.111)	(0.120)	(0.120)
East Anglia	-0.113	-0.152	-0.231	-0.229
	(0.129)	(0.131)	(0.145)	(0.145)
South West	-0.029	-0.048	-0.110	-0.109
	(0.100)	(0.100)	(0.109)	(0.109)
London	0.443**	0.434**	0.444**	0.434**
	(0.127)	(0.130)	(0.140)	(0.140)
Wales	0.195*	0.171*	0.137	0.133
	(0.109)	(0.110)	(0.119)	(0.119)
Scotland	0.015	0.008	0.006	0.001
	(0.098)	(0.099)	(0.106)	(0.107)
$\mu 1$	-0.173	-0.538	-0.441	-0.385
	(0.198)	(0.216)	(0.243)	(0.247)
$\mu 2$	0.286	-0.073	0.040	0.097
	(0.198)	(0.216)	(0.243)	(0.247)
$\mu 3$	0.565	0.213	0.319	0.377
	(0.198)	(0.216)	(0.243)	(0.247)
$\mu 4$	0.944	0.599	0.695	0.753
	(0.198)	(0.216)	(0.242)	(0.247)
$\mu 5$	1.443	1.108	1.222	1.282
	(0.198)	(0.216)	(0.244)	(0.249)
Observations	1872	1846	1590	1590
Pseudo R^2	0.0348	0.0407	0.0490	0.0500
Pseudo-functional form	$\chi^2(3)=2.925$	$\chi^2(3)=3.493$	$\chi^2(3)=1.046$	$\chi^2(3)=1.254$
Normality	$\chi^2(2)=4.716$	$\chi^2(2)=5.223$	$\mathbf{\chi^2(2)=9.164}$	$\mathbf{\chi^2(2)=8.265}$
Heteroscedasticity	$\chi^2(38)=45.766$	$\chi^2(44)=50.617$	$\chi^2(50)=67.231$	$\mathbf{\chi^2(53)=76.141}$

Notes: See table 5.2a.

Table 5.3b: Changes in predicted probabilities index 2 (men).

Prob(index 2) =	0 Social integration	1	2	3	4	5 Max. social exclusion
Childhood family background						
Teenage mother	8.01	0.70	-0.49	-1.49	-2.73	-4.01
Relative in contact with police (by 11)	-9.54	-2.05	-0.08	1.25	3.41	7.01
Parents tenants when (16)	-3.90	-0.53	0.14	0.66	1.37	2.25
Always lived with both natural parents	1.27	0.18	-0.04	-0.21	-0.45	-0.75
Father was at risk of unemployment	-3.20	-0.38	0.15	0.56	1.11	1.76
Father was unemployed once or more	-9.95	-1.73	0.15	1.50	3.53	6.50
Couple, only male working (11)	-0.48	-0.06	0.02	0.08	0.17	0.28
Single mother working (11)	1.13	0.14	-0.05	-0.20	-0.39	-0.63
Single mother not working (11)	-10.90	-2.44	-0.16	1.36	3.89	8.25
Childhood personal characteristics						
Reported once below average knowledge (by 11)	-0.33	-0.04	0.02	0.06	0.11	0.18
Reported below average knowledge at 7 and 11	-7.64	-1.33	0.11	1.16	2.71	4.98
Reported badly behaved by school (16)	-4.79	-0.68	0.16	0.80	1.69	2.83
Reported badly behaved by mother (16)	-4.20	-0.57	0.16	0.71	1.47	2.42
Referred to a social agency (16)	-6.25	-1.07	0.11	0.96	2.22	4.02
Had contacts with the police (16)	-1.27	-0.18	0.04	0.21	0.45	0.75
Adulthood personal characteristics (at 23)						
Professional & intermediate	1.94	0.15	-0.13	-0.37	-0.66	-0.94
Skilled manuals	-0.83	-0.08	0.05	0.15	0.29	0.43
Other manuals	-12.92	-2.56	0.00	1.78	4.59	9.12
Other qualification	5.33	1.14	0.04	-0.71	-1.91	-3.90
Olevels/Lower vocational	7.89	1.52	-0.04	-1.13	-2.82	-5.43
5+ Olevels/Middle vocational	12.76	1.96	-0.32	-2.03	-4.48	-7.89
A levels	9.66	1.72	-0.12	-1.44	-3.43	-6.39
Highest vocational	10.57	1.81	-0.17	-1.61	-3.74	-6.85
Degree	12.19	1.93	-0.28	-1.92	-4.29	-7.63
Has children	-9.35	-1.72	0.08	1.37	3.33	6.29
Adulthood family background (at 23)						
Partner working	5.10	0.61	-0.23	-0.89	-1.77	-2.82
Partner unemployed or OLF	2.55	0.36	-0.09	-0.43	-0.90	-1.49
Region of residence at 33						
East Midlands	-6.85	-1.11	0.15	1.08	2.43	4.30
London	-13.77	-3.11	-0.23	1.68	4.89	10.54
Scotland	-0.04	0.00	0.00	0.01	0.01	0.02
Predicted base probability (at the means)	0.307	0.184	0.111	0.135	0.141	0.122
Base person 1	0.407	0.190	0.103	0.116	0.107	0.076
Base person 1, anti-social behaviour	0.238	0.171	0.111	0.145	0.165	0.170
Base person 1, family difficulties	0.283	0.180	0.111	0.139	0.149	0.138
Anti-social behaviour, family difficulties	0.146	0.138	0.102	0.149	0.196	0.270
Base person 2	0.323	0.186	0.110	0.133	0.135	0.113
Base person 2, anti-social behaviour, family difficulties	0.101	0.113	0.090	0.142	0.207	0.348
Anti-social behaviour, family difficulties, degree	0.179	0.152	0.107	0.149	0.186	0.228
Anti-social behaviour, family difficulties, middle vocational	0.183	0.153	0.107	0.149	0.185	0.223
Base person 3	0.390	0.190	0.105	0.120	0.113	0.083
Base person 3, anti-social behaviour, family difficulties	0.136	0.133	0.100	0.148	0.199	0.285
Anti-social behaviour, family difficulties, partner works	0.170	0.148	0.105	0.149	0.189	0.238
Anti-social behaviour, family difficulties, partners does not work	0.153	0.141	0.103	0.149	0.194	0.261

See notes below

Table 5.4a: Ordered probit for index 3 of social exclusion (men).

	Childhood only	+ education	+ adulthood	Same,combined
Childhood family background				
Teenage mother	-0.213**	-0.247**	-0.320**	-0.309**
	(0.098)	(0.099)	(0.109)	(0.109)
Father left school after 15	-0.028	-0.021	0.007	0.003
	(0.073)	(0.074)	(0.084)	(0.085)
Mother left school after 15	-0.087	-0.078	-0.080	-0.074
	(0.072)	(0.073)	(0.080)	(0.080)
Had a relative in contact with police (by 11)	0.223	0.175	0.300	0.306
	(0.419)	(0.410)	(0.456)	(0.459)
Parents were tenants (16)	0.087	0.069	0.052	0.059
	(0.059)	(0.06*)	(0.066)	(0.066)
Some parental incentive for school	0.040	0.043	0.010	0.006
	(0.139)	(0.139)	(0.154)	(0.154)
Large parental incentive for school	-0.043	-0.002	0.004	0.001
	(0.128)	(0.129)	(0.143)	(0.143)
Always lived with both natural parents	-0.127	-0.172	-0.100	-0.082
	(0.132)	(0.129)	(0.145)	(0.145)
Family were at risk financial difficulties	0.188	0.206	0.009	0.021
	(0.238)	(0.234)	(0.262)	(0.261)
Family had financial difficulties once or more	0.054	0.033	0.002	0.005
	(0.086)	(0.087)	(0.095)	(0.095)
Father was at risk unemployed	0.063	0.072	0.093	0.100
	(0.086)	(0.087)	(0.094)	(0.094)
Father was unemployed once or more	0.242**	0.255**	0.273**	0.268**
	(0.099)	(0.101)	(0.112)	(0.112)
Non-working mother in couple (7)				0.019
				(0.067)
Lone working mother (7)				-0.433
				(0.341)
Lone non-working mother (7)				0.645
				(0.409)
Non-working mother in couple (11)				0.026
				(0.072)
Lone working mother (11)				-0.094
				(0.300)
Lone non-working mother (11)				0.255
				(0.443)
Non-working mother in couple (16)				0.023
				(0.073)
Lone working mother (16)				-0.225
				(0.244)
Lone non-working mother (16)				-0.197
				(0.236)
Mother works (7)	-0.020	-0.017	-0.029	
	(0.060)	(0.061)	(0.067)	
Mother works (11)	-0.015	-0.023	-0.026	
	(0.065)	(0.066)	(0.071)	
Mother works (16)	-0.015	-0.016	-0.028	
	(0.064)	(0.065)	(0.072)	
Single mother (7)	-0.331	-0.257	-0.185	
	(0.260)	(0.262)	(0.275)	
Single mother (11)	0.159	0.099	-0.040	
	(0.234)	(0.238)	(0.262)	
Single mother (16)	-0.276*	-0.303*	-0.247	
	(0.194)	(0.197)	(0.220)	
Childhood personal characteristics				
Above average at maths test score (7)	0.034	0.045	0.041	0.041
	(0.059)	(0.060)	(0.065)	(0.065)
Above average at reading test score (7)	-0.154**	-0.137*	-0.142*	-0.140*
	(0.069)	(0.070)	(0.076)	(0.076)
Quick to settle (7)	-0.075	-0.061	-0.066	-0.065
	(0.061)	(0.061)	(0.066)	(0.066)
Reported once below average knowledge	0.065	0.012	-0.007	-0.009
	(0.075)	(0.077)	(0.084)	(0.084)
Reported twice below average knowledge	0.315**	0.206**	0.186*	0.189*
	(0.100)	(0.104)	(0.112)	(0.112)
Has been in care	0.208	0.161	0.120	0.083
	(0.185)	(0.189)	(0.205)	(0.207)
Reported badly behaved by school (16)	0.270**	0.212**	0.220**	0.219**
	(0.061)	(0.063)	(0.068)	(0.068)

Table 5.4a (ctd.)

Reported badly behaved by mother (16)	0.121**	0.117**	0.127**	0.127**
	(0.054)	(0.055)	(0.060)	(0.060)
Referred to a social agency (16)	0.261**	0.262**	0.195	0.193*
	(0.110)	(0.112)	(0.123)	(0.123)
Had contacts with the police (16)	0.017	-0.003	0.023	0.029
	(0.102)	(0.102)	(0.111)	(0.110)
Adulthood personal characteristics (at 23)				
Professional & intermediate			-0.030	-0.032
			(0.100)	(0.100)
Skilled manuals			0.064	0.058
			(0.086)	(0.086)
Other manuals			0.379**	0.376**
			(0.109)	(0.110)
Has children			0.215*	0.213*
			(0.116)	(0.116)
Other education		-0.140	-0.171	-0.166
		(0.121)	(0.141)	(0.141)
O levels/ Lower vocational		-0.338**	-0.253**	-0.257**
		(0.118)	(0.134)	(0.135)
5+ O levels/ Middle vocational		-0.467**	-0.371**	-0.369**
		(0.119)	(0.135)	(0.136)
A levels		-0.447**	-0.362**	-0.354**
		(0.143)	(0.167)	(0.168)
Highest vocational		-0.475**	-0.320**	-0.320**
		(0.142)	(0.157)	(0.158)
Degree		-0.434**	-0.347**	-0.344**
		(0.150)	(0.176)	(0.177)
Adulthood family background (at 23)				
Partner working			-0.144**	-0.140**
			(0.069)	(0.068)
Partner unemployed or OLF			-0.029	-0.017
			(0.120)	(0.120)
Region of residence at 33				
North	0.148	0.131	0.023	0.022
	(0.111)	(0.113)	(0.121)	(0.121)
North West	-0.011	-0.035	-0.039	-0.047
	(0.112)	(0.115)	(0.124)	(0.124)
Yorkshire & Humberside	0.116	0.111	0.096	0.090
	(0.097)	(0.098)	(0.104)	(0.104)
West Midlands	-0.012	-0.024	-0.057	-0.053
	(0.104)	(0.106)	(0.116)	(0.116)
East Midlands	0.072	0.069	0.105	0.105
	(0.111)	(0.112)	(0.123)	(0.123)
East Anglia	-0.113	-0.149	-0.224	-0.223
	(0.134)	(0.136)	(0.152)	(0.152)
South West	-0.026	-0.044	-0.108	-0.107
	(0.106)	(0.106)	(0.115)	(0.115)
London	0.439**	0.431**	0.454**	0.449**
	(0.139)	(0.142)	(0.157)	(0.157)
Wales	0.189*	0.159	0.131	0.125
	(0.115)	(0.116)	(0.128)	(0.128)
Scotland	0.002	0.004	-0.001	-0.005
	(0.104)	(0.105)	(0.114)	(0.114)
$\mu 1$	-0.314	-0.708	-0.549	-0.459
	(0.212)	(0.236)	(0.268)	(0.269)
$\mu 2$	0.598	0.221	0.410	0.502
	(0.213)	(0.236)	(0.268)	(0.269)
Number of observations	1872	1846	1590	1590
Pseudo R^2	0.0470	0.0558	0.0654	0.0666
Pseudo-functional form	$\chi^2(3)=2.270$	$\chi^2(3)=2.311$	$\chi^2(3)=0.783$	$\chi^2(3)=2.004$
Normality	$\chi^2(2)=\mathbf{6.869}$	$\chi^2(2)=\mathbf{7.862}$	$\chi^2(2)=\mathbf{10.447}$	$\chi^2(2)=\mathbf{9.547}$
Heteroscedasticity	$\chi^2(38)=40.079$	$\chi^2(44)=48.280$	$\chi^2(50)=57.818$	$\chi^2(53)=64.401$

Notes: See table 5.2a.

Table 5.4b: Changes in predicted probabilities index 3 (men).

Prob(index 3) =	0 Social integration	1	2 Max. social exclusion
Childhood family background			
Teenage mother	11.53	-1.32	-10.21
Relative in contact with police (by 11)	-10.03	-1.48	11.51
Parents tenants when (16)	-2.09	0.01	2.08
Always lived with both natural parents	2.89	0.07	-2.95
Father was at risk of unemployment	-3.60	0.11	3.49
Father was unemployed once or more	-9.27	-0.48	9.75
Couple, only male working (11)	-0.94	0.00	0.94
Single mother working (11)	3.43	-0.20	-3.23
Single mother not working (11)	-8.52	-0.96	9.48
Childhood personal characteristics			
Reported once below average knowledge (by 11)	0.34	-0.01	-0.33
Reported below average knowledge at 7 and 11	-6.50	-0.38	6.88
Reported badly behaved by school (16)	-7.70	-0.11	7.81
Reported badly behaved by mother (16)	-4.54	0.02	4.52
Referred to a social agency (16)	-6.62	-0.41	7.03
Had contacts with the police (16)	-1.02	0.00	1.03
Adulthood personal characteristics (at 23)			
Professional & intermediate	1.20	-0.13	-1.07
Skilled manuals	-2.13	0.14	1.99
Other manuals	-12.72	-1.12	13.84
Other qualification	5.45	0.81	-6.27
Olevels/Lower vocational	8.66	0.86	-9.52
5+ Olevels/Middle vocational	12.77	0.54	-13.31
A levels	12.22	0.61	-12.83
Highest vocational	10.94	0.73	-11.67
Degree	11.84	0.65	-12.49
Has children	-7.32	-0.46	7.78
Adulthood family background (at 23)			
Partner working	5.07	-0.19	-4.88
Partner unemployed or OLF	0.60	0.01	-0.62
Region of residence at 33			
East Midlands	-3.70	-0.07	3.76
London	-14.23	-2.82	17.04
Scotland	0.16	-0.01	-0.16
Predicted base probability (at the means)	0.317	0.369	0.314
Base person 1	0.420	0.356	0.224
Base person 1, anti-social behaviour	0.221	0.355	0.425
Base person 1, family difficulties	0.317	0.369	0.314
Anti-social behaviour, family difficulties	0.148	0.319	0.533
Base person 2	0.331	0.369	0.300
Base person 2, anti-social behaviour, family difficulties	0.101	0.275	0.624
Anti-social behaviour, family difficulties, degree	0.175	0.336	0.489
Anti-social behaviour, family difficulties, middle vocational	0.182	0.339	0.479
Base person 3	0.406	0.359	0.235
Base person 3, anti-social behaviour, family difficulties	0.140	0.313	0.547
Anti-social behaviour, family difficulties, partner works	0.174	0.335	0.491
Anti-social behaviour, family difficulties, partners does not work	0.144	0.316	0.540

See notes below

Table 5.5a: Ordered probit with index 1 of social exclusion (women)

	Childhood only	+ education	+ adulthood	Same,combined
Childhood family background				
Teenage mother	-0.077	-0.069	-0.030	-0.034
	(0.095)	(0.096)	(0.098)	(0.099)
Father left school after 15	0.015	0.066	0.081	0.080
	(0.072)	(0.075)	(0.081)	(0.081)
Mother left school after 15	0.054	0.087	0.075	0.075
	(0.072)	(0.074)	(0.079)	(0.079)
Relative in contact with police (by 11)	0.613**	0.641**	0.595**	0.550**
	(0.214)	(0.222)	(0.251)	(0.259)
Parents were tenants (16)	0.176**	0.143**	0.117*	0.116*
	(0.057)	(0.058)	(0.062)	(0.062)
Some parental incentive for school	-0.224*	-0.230*	-0.167	-0.153
	(0.133)	(0.134)	(0.144)	(0.145)
Large parental incentive for school	-0.293**	-0.249**	-0.186	-0.173
	(0.124)	(0.126)	(0.136)	(0.136)
Always lived with both natural parents	-0.361**	-0.359**	-0.250*	-0.241*
	(0.123)	(0.123)	(0.134)	(0.135)
Family were at risk of financial difficulties	-0.417*	-0.515*	-0.301	-0.296
	(0.229)	(0.254)	(0.259)	(0.259)
Family had financial difficulties once or more	0.052	0.044	0.049	0.055
	(0.080)	(0.080)	(0.087)	(0.087)
Father was at risk of unemployment	-0.013	0.011	-0.017	-0.010
	(0.081)	(0.081)	(0.087)	(0.087)
Father was unemployed once or more	0.051	0.086	0.028	0.021
	(0.090)	(0.093)	(0.099)	(0.099)
Non-working mother in couple (7)				0.016
				(0.062)
Lone working mother (7)				-0.022
				(0.266)
Lone non-working mother (7)				0.297
				(0.424)
Non-working mother in couple (11)				-0.090
				(0.067)
Lone working mother (11)				-0.304
				(0.242)
Lone non-working mother (11)				-0.065
				(0.335)
Non-working mother in couple (16)				0.092
				(0.066)
Lone working mother (16)				-0.070
				(0.231)
Lone non-working mother (16)				0.085
				(0.231)
Mother works (7)	-0.032	-0.034	-0.018	
	(0.058)	(0.058)	(0.061)	
Mother works (11)	0.102*	0.092	0.083	
	(0.062)	(0.063)	(0.067)	
Mother works (16)	-0.071	-0.069	-0.096	
	(0.061)	(0.061)	(0.065)	
Single mother (7)	-0.154	-0.163	0.015	
	(0.211)	(0.217)	(0.244)	
Single mother (11)	-0.302*	-0.354*	-0.215	
	(0.182)	(0.186)	(0.208)	
Single mother (16)	-0.184	-0.160	-0.061	
	(0.164)	(0.167)	(0.184)	
Childhood personal characteristics				
Above average at maths test score (7)	-0.024	0.011	0.013	0.013
	(0.056)	(0.057)	(0.061)	(0.061)
Above average at reading test score (7)	-0.092	-0.049	-0.067	-0.067
	(0.064)	(0.065)	(0.070)	(0.070)
Settled within one month at school (7)	-0.023	-0.010	-0.002	-0.003
	(0.058)	(0.059)	(0.063)	(0.063)
Reported once below average knowledge	-0.026	-0.091	-0.105	-0.105
	(0.070)	(0.072)	(0.077)	(0.077)
Reported twice below average knowledge	0.231**	0.156*	0.109	0.108
	(0.090)	(0.094)	(0.100)	(0.100)
Has been in care	0.003	-0.022	-0.039	-0.035
	(0.189)	(0.192)	(0.197)	(0.197)
Reported badly behaved by school (16)	0.110*	0.045	0.051	0.050
	(0.062)	(0.064)	(0.068)	(0.068)

Table 5.5a (ctd.)

Reported badly behaved by mother at 16	0.117**	0.090*	0.061	0.058
	(0.052)	(0.053)	(0.056)	(0.056)
Referred to a social agency at 16	0.273**	0.248**	0.218*	0.219*
	(0.105)	(0.106)	(0.114)	(0.114)
Had contacts with the police at 16	0.144	0.113	0.095	0.099
	(0.136)	(0.137)	(0.145)	(0.145)
Adulthood personal characteristics (at 23)				
Professional & intermediate			-0.056	-0.059
			(0.087)	(0.087)
Skilled manuals			0.090	0.093
			(0.102)	(0.102)
Other manuals			0.346**	0.350**
			(0.084)	(0.084)
Has children			0.084	0.082
			(0.070)	(0.071)
Other education		-0.144	-0.047	-0.043
		(0.096)	(0.106)	(0.106)
O levels/ Lower vocational		-0.161*	-0.028	-0.022
		(0.097)	(0.108)	(0.109)
5+ O levels/ Middle vocational		-0.440**	-0.281**	-0.278**
		(0.112)	(0.122)	(0.123)
A levels		-0.393**	-0.152	-0.151
		(0.132)	(0.150)	(0.149)
Highest vocational		-0.542**	-0.320**	-0.313**
		(0.125)	(0.149)	(0.149)
Degree		-0.484**	-0.371**	-0.370**
		(0.140)	(0.165)	(0.165)
Adulthood family background (at 23)				
Partner working			-0.160**	-0.158**
			(0.063)	(0.063)
Partner unemployed or OLF			0.222*	0.231*
			(0.137)	(0.136)
Region of residence at 33				
North	0.276**	0.255**	0.142	0.144
	(0.117)	(0.119)	(0.127)	(0.127)
North West	0.196**	0.183*	0.106	0.105
	(0.096)	(0.097)	(0.103)	(0.103)
Yorkshire & Humberside	0.100	0.072	0.022	0.020
	(0.101)	(0.101)	(0.107)	(0.107)
West Midlands	0.114	0.098	0.012	0.009
	(0.101)	(0.102)	(0.108)	(0.108)
East Midlands	0.240**	0.236**	0.219*	0.220*
	(0.107)	(0.109)	(0.113)	(0.113)
East Anglia	0.197*	0.164	0.141	0.141
	(0.127)	(0.128)	(0.136)	(0.136)
South West	-0.061	-0.071	-0.131	-0.131
	(0.098)	(0.099)	(0.106)	(0.107)
London	0.420**	0.421**	0.455**	0.453**
	(0.134)	(0.135)	(0.145)	(0.146)
Wales	0.118	0.103	0.010	0.004
	(0.113)	(0.113)	(0.124)	(0.125)
Scotland	0.357**	0.340**	0.266**	0.265**
	(0.100)	(0.103)	(0.112)	(0.112)
$\mu 1$	-0.440	-0.686	-0.477	-0.429
	(0.193)	(0.208)	(0.231)	(0.234)
$\mu 2$	-0.092	-0.336	-0.129	-0.080
	(0.193)	(0.208)	(0.230)	(0.234)
$\mu 3$	0.225	-0.017	0.187	0.236
	(0.193)	(0.208)	(0.230)	(0.234)
$\mu 4$	0.548	0.308	0.519	0.569
	(0.193)	(0.208)	(0.231)	(0.235)
$\mu 5$	1.178	0.948	1.190	1.239
	(0.196)	(0.210)	(0.233)	(0.237)
Number of observations	1936	1920	1715	1715
Pseudo R^2	0.0308	0.0365	0.0429	0.0431
Pseudo-functional form	$\chi^2(3)=2.553$	$\chi^2(3)=3.998$	$\chi^2(3)=1.640$	$\chi^2(3)=3.106$
Normality	$\chi^2(2)=4.877$	$\chi^2(2)=4.905$	$\chi^2(2)=4.421$	$\chi^2(2)=4.220$
Heteroscedasticity	$\chi^2(38)=47.657$	$\chi^2(44)=53.302$	**$\chi^2(50)=68.647$**	**$\chi^2(53)=71.518$**

Notes: See notes table 5.2a.

Table 5.5b: changes in predicted probabilities index 1 (women).

Prob(index 1) =	0 Social integration	1	2	3	4	5 Max. social exclusion
Childhood family background						
Mother was younger than 20 at delivery	1.36	-0.05	-0.17	-0.26	-0.50	-0.37
A family member had been in contact with police etc. when child was 11	-20.47	-1.18	1.09	3.04	8.37	9.15
Parents tenants when child was 16	-4.60	0.16	0.57	0.86	1.71	1.29
Always lived with both natural parents	9.48	-0.06	-0.99	-1.69	-3.66	-3.07
Father was never unemployed (+ missing)	0.39	-0.01	-0.05	-0.07	-0.15	-0.11
Father was unemployed twice or more	-0.85	0.03	0.10	0.16	0.32	0.25
Mother does not work + male head (11)	3.58	-0.12	-0.44	-0.67	-1.33	-1.01
Mother works + no male head (child is 11)	12.08	-0.84	-1.75	-2.36	-4.25	-2.87
Mother does not work + no male head (11)	2.59	-0.08	-0.31	-0.48	-0.97	-0.74
Childhood personal characteristics						
Was reported once by school to have below average knowledge (by 11)	4.19	-0.22	-0.56	-0.80	-1.52	-1.08
Was reported by school to have below average knowledge at 7 and 11	-4.27	0.07	0.47	0.78	1.63	1.32
Reported badly behaved by school at 16	-1.99	0.06	0.24	0.37	0.74	0.56
Reported badly behaved by mother at 16	-2.29	0.08	0.28	0.43	0.85	0.64
Referred to a social agency at 16	-8.62	0.04	0.89	1.53	3.34	2.81
Had contacts with the police at 16	-3.92	0.08	0.45	0.72	1.49	1.19
Adulthood personal characteristics (at 23)						
Professional & intermediate	2.37	-0.16	-0.34	-0.46	-0.84	-0.57
Skilled manuals	-3.72	0.15	0.48	0.70	1.37	1.01
Other manuals	-13.67	-0.04	1.32	2.38	5.34	4.66
Other qualification	1.68	0.00	-0.17	-0.30	-0.65	-0.55
Olevels/Lower vocational	0.88	0.00	-0.09	-0.15	-0.34	-0.29
5+ Olevels/Middle vocational	11.03	-0.46	-1.41	-2.08	-4.06	-3.02
A levels	5.98	-0.12	-0.68	-1.10	-2.27	-1.81
Highest vocational	12.43	-0.59	-1.63	-2.36	-4.54	-3.31
Degree	14.67	-0.83	-2.01	-2.82	-5.27	-3.74
Has children	-3.24	0.10	0.39	0.60	1.22	0.93
Adulthood family background (at 23)						
Partner working	6.27	-0.24	-0.79	-1.18	-2.32	-1.74
Partner unemployed or OLF	-8.90	-0.26	0.69	1.46	3.58	3.42
Region of residence at 33						
East Midlands	-8.73	0.24	1.03	1.62	3.29	2.56
London	-17.54	-0.23	1.55	2.97	6.91	6.33
Scotland	-10.46	0.20	1.18	1.91	3.98	3.19
Predicted base probability (at the means)	0.471	0.138	0.114	0.099	0.122	0.055
Base person 1	0.460	0.138	0.116	0.102	0.127	0.059
Base person 1, anti-social behaviour	0.299	0.130	0.126	0.126	0.192	0.127
Base person 1, family difficulties	0.429	0.138	0.119	0.107	0.138	0.068
Anti-social behaviour, family difficulties	0.273	0.126	0.125	0.129	0.203	0.144
Base person 2	0.413	0.138	0.121	0.110	0.145	0.074
Base person 2, anti-social behaviour, family difficulties	0.235	0.119	0.123	0.131	0.219	0.172
Anti-social behaviour, family difficulties, degree	0.363	0.136	0.124	0.118	0.165	0.094
Anti-social behaviour, family difficulties, middle vocational	0.329	0.134	0.125	0.123	0.179	0.111
Base person 3	0.432	0.138	0.119	0.107	0.137	0.068
Base person 3, anti-social behaviour, family difficulties	0.250	0.122	0.124	0.131	0.213	0.160
Anti-social behaviour, family difficulties, partner works	0.303	0.131	0.126	0.126	0.191	0.125
Anti-social behaviour, family difficulties, partners does not work	0.183	0.106	0.116	0.132	0.240	0.223

See notes below

Table 5.6a: Ordered probit with index 2 of social exclusion (women).

	Childhood only	+ education	+ adulthood	Same,combined
Childhood family background				
Teenage mother	-0.098	-0.091	-0.075	-0.080
	(0.095)	(0.096)	(0.098)	(0.099)
Father left school after 15	0.002	0.054	0.053	0.053
	(0.072)	(0.075)	(0.081)	(0.081)
Mother left school after 15	0.052	0.087	0.077	0.077
	(0.072)	(0.075)	(0.080)	(0.080)
Relative in contact with police (by 11)	0.580**	0.642**	0.672**	0.635**
	(0.229)	(0.232)	(0.259)	(0.268)
Parents were tenants (16)	0.186**	0.152**	0.119*	0.117*
	(0.058)	(0.059)	(0.063)	(0.063)
Some parental incentive for school	-0.075	-0.073	0.021	0.035
	(0.131)	(0.133)	(0.143)	(0.144)
Large parental incentive for school	-0.192*	-0.138	-0.039	-0.026
	(0.121)	(0.124)	(0.134)	(0.135)
Always lived with both natural parents	-0.412**	-0.413**	-0.320**	-0.314**
	(0.132)	(0.132)	(0.146)	(0.146)
Family were at risk of financial difficulties	-0.316	-0.436*	-0.224	-0.219
	(0.265)	(0.288)	(0.297)	(0.297)
Family had financial difficulties once or more	0.093	0.082	0.068	0.074
	(0.082)	(0.083)	(0.089)	(0.089)
Father was at risk of unemployment	-0.009	0.013	-0.014	-0.008
	(0.083)	(0.083)	(0.090)	(0.089)
Father was unemployed once or more	0.036	0.069	0.034	0.028
	(0.092)	(0.095)	(0.102)	(0.102)
Non-working mother in couple (7)				0.029
				(0.063)
Lone working mother (7)				0.120
				(0.285)
Lone non-working mother (7)				0.231
				(0.387)
Non-working mother in couple (11)				-0.110*
				(0.068)
Lone working mother (11)				-0.400*
				(0.240)
Lone non-working mother (11)				-0.196
				(0.348)
Non-working mother in couple (16)				0.115*
				(0.068)
Lone working mother (16)				-0.138
				(0.234)
Lone non-working mother (16)				0.084
				(0.258)
Mother works (7)	-0.036	-0.043	-0.029	
	(0.059)	(0.059)	(0.063)	
Mother works (11)	0.118*	0.109*	0.102	
	(0.063)	(0.063)	(0.067)	
Mother works (16)	-0.095*	-0.091	-0.121*	
	(0.062)	(0.063)	(0.067)	
Single mother (7)	-0.042	-0.047	0.123	
	(0.226)	(0.234)	(0.258)	
Single mother (11)	-0.369**	-0.430**	-0.317	
	(0.186)	(0.190)	(0.210)	
Single mother (16)	-0.234	-0.207	-0.104	
	(0.173)	(0.176)	(0.195)	
Childhood personal characteristics				
Above average at maths test score (7)	-0.012	0.023	0.023	0.024
	(0.056)	(0.057)	(0.061)	(0.061)
Above average at reading test score (7)	-0.121*	-0.078	-0.090	-0.090
	(0.067)	(0.068)	(0.073)	(0.073)
Quick to settle (7)	-0.025	-0.012	-0.009	-0.010
	(0.059)	(0.060)	(0.064)	(0.064)
Reported once below average knowledge	-0.023	-0.094	-0.110	-0.110
	(0.073)	(0.075)	(0.081)	(0.081)
Reported twice below average knowledge	0.242**	0.151*	0.094	0.093
	(0.093)	(0.097)	(0.103)	(0.103)
Has been in care	-0.107	-0.139	-0.140	-0.140
	(0.192)	(0.194)	(0.202)	(0.204)
Reported badly behaved by school (16)	0.109*	0.039	0.046	0.045
	(0.063)	(0.065)	(0.070)	(0.070)

Table 5.6a (ctd.)

Reported badly behaved by mother (16)	0.105**	0.078	0.049	0.047
	(0.053)	(0.054)	(0.057)	(0.058)
Referred to a social agency (16)	0.250**	0.214*	0.159	0.159
	(0.110)	(0.112)	(0.118)	(0.118)
Had contacts with the police (16)	0.248*	0.225*	0.182	0.185
	(0.146)	(0.147)	(0.154)	(0.154)
Adulthood personal characteristics (at 23)				
Professional & intermediate			0.031	0.027
			(0.089)	(0.090)
Skilled manuals			0.118	0.121
			(0.103)	(0.103)
Other manuals			0.354**	0.360**
			(0.087)	(0.087)
Has children			0.114*	0.110
			(0.073)	(0.074)
Other education		-0.213**	-0.113	-0.107
		(0.101)	(0.111)	(0.111)
O levels/ Lower vocational		-0.233**	-0.111	-0.105
		(0.103)	(0.114)	(0.115)
5+ O levels/ Middle vocational		-0.491**	-0.341**	-0.336**
		(0.117)	(0.127)	(0.128)
A levels		-0.466**	-0.230*	-0.228**
		(0.136)	(0.152)	(0.152)
Highest vocational		-0.615**	-0.443**	-0.435**
		(0.129)	(0.153)	(0.153)
Degree		-0.557**	-0.481**	-0.477**
		(0.143)	(0.168)	(0.168)
Adulthood family background (at 23)				
Partner working			-0.129**	-0.126**
			(0.063)	(0.063)
Partner unemployed or OLF			0.341**	0.350**
			(0.148)	(0.148)
Region of residence at 33				
North	0.272**	0.249**	0.106	0.107
	(0.121)	(0.123)	(0.131)	(0.131)
North West	0.203**	0.191*	0.110	0.109
	(0.097)	(0.098)	(0.104)	(0.104)
Yorkshire & Humberside	0.135	0.109	0.036	0.033
	(0.103)	(0.103)	(0.109)	(0.109)
West Midlands	0.121	0.107	0.012	0.010
	(0.102)	(0.103)	(0.110)	(0.110)
East Midlands	0.239**	0.237**	0.221*	0.222*
	(0.108)	(0.110)	(0.115)	(0.115)
East Anglia	0.178	0.150	0.114	0.113
	(0.130)	(0.131)	(0.140)	(0.140)
South West	-0.043	-0.050	-0.108	-0.109
	(0.101)	(0.102)	(0.111)	(0.111)
London	0.336**	0.342**	0.364**	0.362**
	(0.130)	(0.130)	(0.141)	(0.141)
Wales	0.189*	0.173	0.044	0.038
	(0.118)	(0.118)	(0.128)	(0.128)
Scotland	0.325**	0.304**	0.202*	0.202*
	(0.100)	(0.103)	(0.111)	(0.111)
$\mu 1$	-0.406	-0.711	-0.470	-0.407
	(0.201)	(0.219)	(0.244)	(0.246)
$\mu 2$	0.173	-0.128	0.107	0.171
	(0.201)	(0.219)	(0.244)	(0.246)
$\mu 3$	0.746	0.452	0.708	0.773
	(0.202)	(0.219)	(0.244)	(0.246)
Number of observations	1936	1920	1715	1715
Pseudo R^2	0.0375	0.0451	0.0523	0.0526
Pseudo-functional form	$\chi^2(3)=0.431$	$\chi^2(3)=4.521$	$\chi^2(3)=4.381$	$\chi^2(3)=5.223$
Normality	$\chi^2(2)=7.820$	$\chi^2(2)=7.305$	$\chi^2(2)=5.080$	$\chi^2(2)=4.890$
Heteroscedasticity	$\chi^2(38)=45.446$	$\chi^2(44)=52.294$	$\chi^2(50)=67.185$	$\chi^2(53)=72.528$

Notes: See notes table 5.2a.

Table 5.6b: Changes in predicted probabilities index 2 (women).

Prob(index 2) =	0 Social integration	1	2	3 Max. social exclusion
Childhood family background				
Mother was younger than 20 at delivery	3.19	-0.35	-1.07	-1.76
A family member had been in contact with police etc. when child was 11	-22.81	-1.81	5.70	18.93
Parents tenants when child was 16	-4.63	0.44	1.54	2.65
Always lived with both natural parents	12.17	-0.43	-3.78	-7.96
Father was never unemployed (+ missing)	0.33	-0.03	-0.11	-0.19
Father was unemployed twice or more	-1.11	0.10	0.37	0.65
Mother does not work + male head (11)	4.36	-0.40	-1.45	-2.51
Mother works + no male head (child is 11)	15.83	-2.58	-5.49	-7.76
Mother does not work + no male head (11)	7.77	-0.89	-2.62	-4.26
Childhood personal characteristics				
Was reported once by school to have below average knowledge (by 11)	4.39	-0.52	-1.49	-2.38
Was reported by school to have below average knowledge at 7 and 11	-3.64	0.24	1.18	2.22
Reported badly behaved by school at 16	-1.79	0.16	0.59	1.04
Reported badly behaved by mother at 16	-1.85	0.18	0.62	1.06
Referred to a social agency at 16	-6.21	0.37	2.00	3.84
Had contacts with the police at 16	-7.24	0.36	2.30	4.58
Adulthood personal characteristics (at 23)				
Professional & intermediate	-1.08	0.14	0.37	0.57
Skilled manuals	-4.79	0.52	1.61	2.66
Other manuals	-13.97	0.62	4.38	8.97
Other qualification	4.15	-0.10	-1.28	-2.77
Olevels/Lower vocational	4.04	-0.09	-1.24	-2.70
5+ Olevels/Middle vocational	13.21	-1.13	-4.33	-7.75
A levels	8.94	-0.51	-2.86	-5.56
Highest vocational	17.14	-1.90	-5.73	-9.52
Degree	18.83	-2.28	-6.33	-10.22
Has children	-4.33	0.37	1.43	2.54
Adulthood family background (at 23)				
Partner working	5.01	-0.52	-1.68	-2.82
Partner unemployed or OLF	-13.14	-0.38	3.71	9.80
Region of residence at 33				
East Midlands	-8.72	0.66	2.84	5.21
London	-14.01	0.53	4.36	9.12
Scotland	-7.96	0.65	2.61	4.70
Predicted base probability (at the means)	0.453	0.224	0.178	0.144
Base person 1	0.452	0.224	0.179	0.145
Base person 1, anti-social behaviour	0.289	0.220	0.225	0.267
Base person 1, family difficulties	0.411	0.227	0.192	0.170
Anti-social behaviour, family difficulties	0.255	0.213	0.231	0.302
Base person 2	0.380	0.227	0.201	0.191
Base person 2, anti-social behaviour, family difficulties	0.200	0.196	0.236	0.368
Anti-social behaviour, family difficulties, degree	0.357	0.227	0.208	0.208
Anti-social behaviour, family difficulties, middle vocational	0.306	0.222	0.221	0.251
Base person 3	0.433	0.226	0.185	0.156
Base person 3, anti-social behaviour, family difficulties	0.240	0.209	0.233	0.318
Anti-social behaviour, family difficulties, partner works	0.281	0.218	0.226	0.275
Anti-social behaviour, family difficulties, partners does not work	0.145	0.171	0.233	0.451

See notes below

Table 5.7a: Ordered probit with index 3 of social exclusion (women).

	Childhood only	+ education	+ adulthood	Same,combined
Childhood family background				
Teenage mother	-0.099	-0.095	-0.068	-0.072
	(0.096)	(0.097)	(0.099)	(0.100)
Father left school after 15	0.014	0.066	0.064	0.063
	(0.075)	(0.077)	(0.083)	(0.083)
Mother left school after 15	0.049	0.084	0.070	0.070
	(0.074)	(0.077)	(0.083)	(0.082)
Relative in contact with police (by 11)	0.502**	0.533**	0.530**	0.472*
	(0.212)	(0.218)	(0.245)	(0.254)
Parents were tenants (16)	0.178**	0.145**	0.116**	0.113*
	(0.059)	(0.060)	(0.064)	(0.064)
Some parental incentive for school	-0.139	-0.142	-0.053	-0.038
	(0.136)	(0.138)	(0.146)	(0.147)
Large parental incentive for school	-0.237*	-0.186	-0.097	-0.083
	(0.127)	(0.130)	(0.137)	(0.137)
Always lived with both natural parents	-0.436**	-0.430**	-0.350**	-0.339**
	(0.136)	(0.136)	(0.152)	(0.152)
Family were at risk of financial difficulties	-0.326	-0.428	-0.191	-0.185
	(0.260)	(0.288)	(0.301)	(0.301)
Family had financial difficulties once or more	0.030	0.018	0.031	0.038
	(0.083)	(0.084)	(0.091)	(0.091)
Father was at risk of unemployment	0.008	0.032	0.009	0.016
	(0.084)	(0.084)	(0.090)	(0.090)
Father was unemployed once or more	0.084	0.118	0.070	0.063
	(0.094)	(0.097)	(0.103)	(0.103)
Non-working mother in couple (7)				0.033
				(0.065)
Lone working mother (7)				-0.070
				(0.272)
Lone non-working mother (7)				0.427
				(0.603)
Non-working mother in couple (11)				-0.106
				(0.069)
Lone working mother (11)				-0.477*
				(0.247)
Lone non-working mother (11)				-0.260
				(0.366)
Non-working mother in couple (16)				0.099
				(0.069)
Lone working mother (16)				-0.080
				(0.239)
Lone non-working mother (16)				0.175
				(0.262)
Mother works (7)	-0.046	-0.050	-0.036	
	(0.060)	(0.061)	(0.064)	
Mother works (11)	0.110*	0.101*	0.100	
	(0.064)	(0.065)	(0.069)	
Mother works (16)	-0.086	-0.083	-0.109	
	(0.063)	(0.064)	(0.068)	
Single mother (7)	-0.111	-0.133	-0.014	
	(0.222)	(0.232)	(0.260)	
Single mother (11)	-0.441**	-0.491**	-0.393*	
	(0.195)	(0.199)	(0.225)	
Single mother (16)	-0.170	-0.139	-0.040	
	(0.176)	(0.179)	(0.201)	
Childhood personal characteristics				
Above average at maths test score (7)	-0.014	0.023	0.041	0.041
	(0.057)	(0.058)	(0.062)	(0.062)
Above average at reading test score (7)	-0.090	-0.048	-0.066	-0.066
	(0.068)	(0.069)	(0.074)	(0.074)
Settled within one month at school (7)	-0.031	-0.019	-0.012	-0.013
	(0.061)	(0.061)	(0.065)	(0.065)
Reported once below average knowledge	0.003	-0.065	-0.074	-0.074
	(0.074)	(0.077)	(0.083)	(0.083)
Reported twice below average knowledge	0.251**	0.166*	0.134	0.133
	(0.094)	(0.099)	(0.105)	(0.105)
Has been in care	-0.019	-0.045	-0.019	-0.010
	(0.208)	(0.209)	(0.219)	(0.220)
Reported badly behaved by school (16)	0.072	0.003	0.008	0.007
	(0.064)	(0.066)	(0.071)	(0.071)

Table 5.7a (ctd.)

Reported badly behaved by mother (16)	0.076	0.050	0.021	0.017
	(0.054)	(0.055)	(0.059)	(0.059)
Referred to a social agency (16)	0.237**	0.202*	0.143	0.144
	(0.112)	(0.113)	(0.119)	(0.119)
Had contacts with the police (16)	0.204	0.182	0.165	0.170
	(0.148)	(0.149)	(0.155)	(0.156)
Adulthood personal characteristics (at 23)				
Professional & intermediate			-0.028	-0.031
			(0.091)	(0.091)
Skilled manuals			0.093	0.097
			(0.101)	(0.102)
Other manuals			0.340**	0.345**
			(0.088)	(0.088)
Has children			0.006	0.003
			(0.073)	(0.073)
Other education		-0.177*	-0.084	-0.079
		(0.103)	(0.113)	(0.113)
O levels/ Lower vocational		-0.209**	-0.094	-0.087
		(0.104)	(0.115)	(0.115)
5+ O levels/ Middle vocational		-0.464**	-0.336**	-0.332**
		(0.120)	(0.129)	(0.130)
A levels		-0.435**	-0.244*	-0.242*
		(0.137)	(0.154)	(0.154)
Highest vocational		-0.574**	-0.401**	-0.391**
		(0.133)	(0.157)	(0.157)
Degree		-0.543**	-0.485**	-0.484**
		(0.144)	(0.170)	(0.170)
Adulthood family background (at 23)				
Partner working			-0.133**	-0.130**
			(0.065)	(0.065)
Partner unemployed or OLF			0.297**	0.309**
			(0.146)	(0.145)
Region of residence at 33				
North	0.285**	0.262**	0.138	0.140
	(0.121)	(0.123)	(0.131)	(0.132)
North West	0.181*	0.170*	0.117	0.117
	(0.096)	(0.098)	(0.105)	(0.105)
Yorkshire & Humberside	0.126	0.101	0.043	0.040
	(0.104)	(0.104)	(0.110)	(0.110)
West Midlands	0.150	0.138	0.071	0.067
	(0.105)	(0.106)	(0.114)	(0.114)
East Midlands	0.289**	0.287**	0.282**	0.283**
	(0.114)	(0.117)	(0.120)	(0.120)
East Anglia	0.245*	0.220*	0.205	0.204
	(0.138)	(0.139)	(0.148)	(0.148)
South West	0.001	-0.004	-0.048	-0.048
	(0.104)	(0.104)	(0.113)	(0.113)
London	0.395**	0.404**	0.470**	0.467**
	(0.139)	(0.139)	(0.152)	(0.152)
Wales	0.173	0.160	0.066	0.058
	(0.118)	(0.119)	(0.129)	(0.130)
Scotland	0.283**	0.266**	0.205*	0.202 *
	(0.099)	(0.102)	(0.110)	(0.110)
$\mu 1$	-0.476	-0.748	-0.546	-0.482
	(0.207)	(0.226)	(0.250)	(0.251)
$\mu 2$	0.485	0.219	0.422	0.487
	(0.207)	(0.225)	(0.250)	(0.251)
Number of observations	1936	1920	1715	1715
Pseudo R^2	0.0379	0.0461	0.0539	0.0544
Pseudo-functional form	$\chi^2(3)=0.806$	$\chi^2(3)=2.917$	$\chi^2(3)=4.671$	$\chi^2(3)=5.061$
Normality	$\chi^2(2)=2.161$	$\chi^2(2)=2.223$	$\chi^2(2)=1.754$	$\chi^2(2)=1.983$
Heteroscedasticity	$\chi^2(38)=43.294$	$\chi^2(44)=48.721$	$\chi^2(50)=57.776$	$\chi^2(53)=60.888$

Notes: See notes table 5.2a.

Table 5.7b: Changes in predicted probabilities index 3 (women).

Prob(index 3) =	0 Social integration	1	2 Max. social exclusion
Childhood family background			
Mother was younger than 20 at delivery	2.86	-0.89	-1.96
A family member had been in contact with police etc. when child was 11	-17.54	2.03	15.51
Parents tenants when child was 16	-4.49	1.32	3.17
Always lived with both natural parents	13.06	-2.70	-10.35
Father was never unemployed (+ missing)	-0.63	0.19	0.44
Father was unemployed twice or more	-2.50	0.70	1.80
Mother does not work + male head (11)	4.18	-1.20	-2.98
Mother works + no male head (child is 11)	18.84	-7.53	-11.31
Mother does not work + no male head (11)	10.34	-3.49	-6.85
Childhood personal characteristics			
Was reported once by school to have below average knowledge (by 11)	2.95	-0.96	-1.99
Was reported by school to have below average knowledge at 7 and 11	-5.21	1.32	3.90
Reported badly behaved by school at 16	-0.27	0.08	0.19
Reported badly behaved by mother at 16	-0.67	0.20	0.47
Referred to a social agency at 16	-5.63	1.42	4.21
Had contacts with the police at 16	-6.63	1.59	5.04
Adulthood personal characteristics			
Professional & intermediate	1.23	-0.43	-0.80
Skilled manuals	-3.85	1.19	2.66
Other manuals	-13.36	2.91	10.44
Other qualification	3.05	-0.60	-2.45
Olevels/Lower vocational	3.35	-0.67	-2.68
5+ Olevels/Middle vocational	13.06	-3.76	-9.30
A levels	9.49	-2.44	-7.04
Highest vocational	15.42	-4.73	-10.69
Degree	19.09	-6.40	-12.69
Has children	-0.10	0.03	0.07
Adulthood family background			
Partner working	5.14	-1.56	-3.59
Partner unemployed or OLF	-11.62	1.60	10.02
Region			
East Midlands	-11.11	2.98	8.14
London	-17.89	3.54	14.35
Scotland	-8.00	2.37	5.63
Predicted base probability (at the means)	0.450	0.351	0.200
Base person 1	0.444	0.352	0.203
Base person 1, anti-social behaviour	0.317	0.372	0.311
Base person 1, family difficulties	0.405	0.362	0.233
Anti-social behaviour, family difficulties	0.281	0.371	0.348
Base person 2	0.378	0.367	0.255
Base person 2, anti-social behaviour, family difficulties	0.227	0.360	0.413
Anti-social behaviour, family difficulties, degree	0.395	0.364	0.241
Anti-social behaviour, family difficulties, middle vocational	0.338	0.371	0.291
Base person 3	0.424	0.358	0.218
Base person 3, anti-social behaviour, family difficulties	0.265	0.369	0.367
Anti-social behaviour, family difficulties, partner works	0.309	0.372	0.319
Anti-social behaviour, family difficulties, partners does not work	0.174	0.338	0.487

See notes below

Notes to tables 5.2b, 5.3b, 5.4b, 5.5b, 5.6b, and 5.7b:

(1) Top part of tables: changes in predicted probabilities are for coefficients which were statistically significant in corresponding tables a. They are all in percentage points.

(2) Base person 1 did not have an anti-social behaviour (no reports by school or parents, no referral and no contacts with the police) and any family difficulties (father never unemployed and family never had financial difficulties)

(3) Base person 2 is the same as base person 1 and had no education at 23 years old. All other variables at their means.

(4) Base person 2 is the same as base person 1 and does not have a partner. All other variables at their means.

(5) Anti-social behaviour = reports by school and parents, referral and contacts with the police.

(6) Family difficulties = father unemployed once or more and family had financial difficulties once or more.

Table 5.8a: Ordered probit with indices excluding "does not own a car" (men).

	Index 1	Index 2	Index 3
Childhood family background			
Teenage mother	-0.216**	-0.218**	-0.289**
	(0.105)	(0.105)	(0.105)
Father left school after 15	0.020	0.012	0.015
	(0.083)	(0.080)	(0.086)
Mother left school after 15	-0.021	-0.046	-0.050
	(0.077)	(0.076)	(0.080)
Relative in contact with police (by 11)	-0.013	0.127	0.187
	(0.333)	(0.382)	(0.429)
Parents were tenants (16)	0.077	0.083	0.020
	(0.063)	(0.064)	(0.066)
Some parental incentive for school	0.050	0.044	0.029
	(0.150)	(0.147)	(0.156)
Large parental incentive for school	-0.036	-0.043	-0.015
	(0.142)	(0.138)	(0.146)
Always lived with both natural parents	-0.093	-0.092	-0.090
	(0.136)	(0.133)	(0.142)
Family were at risk of financial difficulties	-0.007	-0.029	-0.023
	(0.231)	(0.218)	(0.228)
Family had financial difficulties once or more	-0.003	0.037	-0.006
	(0.090)	(0.091)	(0.094)
Father was at risk of unemployment	0.131	0.127	0.117
	(0.089)	(0.091)	(0.092)
Father was unemployed once or more	0.321**	0.291**	0.227**
	(0.101)	(0.104)	(0.105)
Non-working mother in couple (7)	0.033	0.008	0.025
	(0.065)	(0.065)	(0.067)
Lone working mother (7)	-0.509*	-0.530*	-0.446
	(0.333)	(0.344)	(0.334)
Lone non-working mother (7)	0.780**	0.637**	0.684*
	(0.325)	(0.264)	(0.361)
Non-working mother in couple (11)	-0.046	-0.021	-0.022
	(0.068)	(0.068)	(0.072)
Lone working mother (11)	-0.041	0.021	-0.129
	(0.296)	(0.317)	(0.292)
Lone non-working mother (11)	0.250	0.327	0.248
	(0.386)	(0.361)	(0.434)
Non-working mother in couple (16)	0.030	0.044	0.048
	(0.070)	(0.070)	(0.073)
Lone working mother (16)	-0.248	-0.205	-0.201
	(0.235)	(0.245)	(0.235)
Lone non-working mother (16)	-0.288	-0.343	-0.113
	(0.289)	(0.286)	(0.227)
Childhood personal characteristics			
Above average at maths test score (7)	0.038	0.036	0.025
	(0.064)	(0.063)	(0.065)
Above average at reading test score (7)	-0.078	-0.131*	-0.159**
	(0.072)	(0.073)	(0.075)
Settled within one month at school (7)	-0.031	-0.071	-0.069
	(0.063)	(0.064)	(0.067)
Reported once below average knowledge	0.008	0.025	0.012
	(0.081)	(0.081)	(0.084)
Reported twice below average knowledge	0.154	0.254**	0.177*
	(0.103)	(0.106)	(0.109)
Has been in care	0.144	0.049	0.086
	(0.193)	(0.196)	(0.194)
Reported badly behaved by school (16)	0.202**	0.171**	0.225**
	(0.066)	(0.065)	(0.069)
Reported badly behaved by mother (16)	0.111*	0.112*	0.118**
	(0.058)	(0.057)	(0.060)
Referred to a social agency (16)	0.190*	0.243**	0.218*
	(0.115)	(0.116)	(0.123)
Had contacts with the police (16)	0.049	-0.038	-0.030
	(0.106)	(0.106)	(0.111)
Adulthood personal characteristics (at 23)			
Professional & intermediate	-0.173*	-0.143	-0.098
	(0.100)	(0.095)	(0.101)

Table 5.8a (ctd.)

Skilled manuals	0.008	0.050	0.072
	(0.085)	(0.084)	(0.087)
Other manuals	0.247**	0.319**	0.325**
	(0.106)	(0.105)	(0.110)
Has children	0.177*	0.200*	0.159
	(0.114)	(0.119)	(0.117)
Other education	-0.085	-0.099	-0.130
	(0.129)	(0.128)	(0.138)
O levels/ Lower vocational	-0.125	-0.142	-0.200*
	(0.126)	(0.125)	(0.133)
5+ O levels/ Middle vocational	-0.215*	-0.263**	-0.299**
	(0.129)	(0.127)	(0.136)
A levels	-0.240	-0.273*	-0.346**
	(0.163)	(0.160)	(0.169)
Highest vocational	-0.223	-0.262*	-0.317**
	(0.151)	(0.147)	(0.157)
Degree	-0.154	-0.197	-0.265*
	(0.170)	(0.164)	(0.175)
Adulthood family background (at 23)			
Partner working	-0.156**	-0.121*	-0.114*
	(0.067)	(0.067)	(0.069)
Partner unemployed or OLF	0.039	0.043	0.069
	(0.120)	(0.121)	(0.121)
Region of residence at 33			
North	0.054	0.060	0.019
	(0.111)	(0.111)	(0.116)
North West	0.014	0.046	-0.011
	(0.119)	(0.119)	(0.123)
Yorkshire & Humberside	0.162*	0.157*	0.105
	(0.106)	(0.103)	(0.105)
West Midlands	0.027	0.031	0.000
	(0.112)	(0.112)	(0.116)
East Midlands	0.109	0.211*	0.138
	(0.116)	(0.122)	(0.123)
East Anglia	-0.338**	-0.267*	-0.249
	(0.152)	(0.153)	(0.164)
South West	-0.076	-0.026	-0.045
	(0.111)	(0.112)	(0.115)
London	0.312**	0.305**	0.327**
	(0.143)	(0.134)	(0.148)
Wales	0.150	0.162	0.126
	(0.123)	(0.120)	(0.128)
Scotland	0.054	0.022	0.042
	(0.112)	(0.109)	(0.117)
μ1	-0.255	-0.300	-0.373
	(0.254)	(0.250)	(0.269)
μ2	0.170	0.150	0.651
	(0.255)	(0.250)	(0.270)
μ3	0.638	0.607	
	(0.256)	(0.250)	
μ4	1.163	0.905	
	(0.256)	(0.250)	
μ5		1.365	
		(0.251)	
Number of observations	1601	1601	1601
Pseudo R^2	0.0455	0.0519	0.0648
Pseudo-functional form	$\chi^2(3)=0.668$	$\chi^2(3)=0.753$	$\chi^2(3)=1.904$
Normality	$\chi^2(2)=5.805$	$\chi^2(2)=\mathbf{11.170}$	$\chi^2(2)=\mathbf{6.539}$
Heteroscedasticity	$\chi^2(53)=\mathbf{74.917}$	$\chi^2(53)=\mathbf{78.164}$	$\chi^2(53)=\mathbf{78.815}$

Notes: see notes table 5.2a.

Table 5.8b: Ordered probit with indices excluding "does not own a car" (women).

	Index 1	Index 2	Index 3
Childhood family background			
Teenage mother	-0.077	-0.075	-0.101
	(0.093)	(0.097)	(0.096)
Father left school after 15	0.090	0.044	0.055
	(0.083)	(0.080)	(0.084)
Mother left school after 15	0.068	0.036	0.052
	(0.083)	(0.080)	(0.084)
Relative in contact with police (by 11)	0.625**	0.561**	0.583**
	(0.270)	(0.268)	(0.278)
Parents were tenants (16)	0.042	0.051	0.060
	(0.063)	(0.063)	(0.064)
Some parental incentive for school	-0.063	0.045	-0.034
	(0.136)	(0.146)	(0.143)
Large parental incentive for school	-0.120	-0.041	-0.113
	(0.129)	(0.135)	(0.133)
Always lived with both natural parents	-0.286**	-0.255**	-0.330**
	(0.142)	(0.146)	(0.149)
Family were at risk of financial difficulties	-0.263	-0.248	-0.232
	(0.265)	(0.275)	(0.272)
Family had financial difficulties once or more	0.100	0.088	0.036
	(0.088)	(0.091)	(0.091)
Father was at risk of unemployment	-0.024	-0.009	-0.026
	(0.090)	(0.091)	(0.089)
Father was unemployed once or more	0.032	0.057	0.051
	(0.102)	(0.103)	(0.103)
Non-working mother in couple (7)	0.018	0.017	0.035
	(0.063)	(0.064)	(0.065)
Lone working mother (7)	0.176	0.239	0.016
	(0.267)	(0.288)	(0.271)
Lone non-working mother (7)	0.631*	0.825	0.655
	(0.410)	(0.556)	(0.610)
Non-working mother in couple (11)	-0.108*	-0.122*	-0.096
	(0.070)	(0.068)	(0.070)
Lone working mother (11)	-0.592**	-0.565**	-0.509**
	(0.246)	(0.247)	(0.257)
Lone non-working mother (11)	-0.422	-0.417	-0.364
	(0.343)	(0.378)	(0.376)
Non-working mother in couple (16)	0.064	0.099	0.032
	(0.067)	(0.069)	(0.069)
Lone working mother (16)	-0.021	-0.081	-0.145
	(0.232)	(0.227)	(0.233)
Lone non-working mother (16)	0.157	0.209	0.162
	(0.241)	(0.260)	(0.259)
Childhood personal characteristics			
Above average at maths test score (7)	0.047	0.067	0.071
	(0.062)	(0.062)	(0.063)
Above average at reading test score (7)	-0.057	-0.101	-0.060
	(0.071)	(0.074)	(0.074)
Settled within one month at school (7)	0.011	-0.019	-0.023
	(0.063)	(0.065)	(0.066)
Reported once below average knowledge	-0.149*	-0.121*	-0.088
	(0.078)	(0.081)	(0.082)
Reported twice below average knowledge	0.077	0.114	0.144
	(0.099)	(0.104)	(0.104)
Has been in care	-0.085	-0.145	0.085
	(0.206)	(0.213)	(0.237)
Reported badly behaved by school (16)	0.033	0.031	0.031
	(0.068)	(0.071)	(0.070)
Reported badly behaved by mother (16)	0.058	0.040	0.017
	(0.057)	(0.058)	(0.059)
Referred to a social agency (16)	0.050	0.028	0.012
	(0.115)	(0.119)	(0.118)
Had contacts with the police (16)	0.247*	0.242*	0.251*
	(0.152)	(0.157)	(0.159)
Adulthood personal characteristics (at 23)			
Professional & intermediate	-0.004	0.052	-0.023
	(0.091)	(0.090)	(0.091)

Table 5.8b (ctd.)

Skilled manuals	0.147	0.182*	0.130
	(0.102)	(0.104)	(0.101)
Other manuals	0.299**	0.365**	0.335**
	(0.084)	(0.087)	(0.088)
Has children	0.020	0.016	-0.076
	(0.070)	(0.073)	(0.072)
Other education	-0.166*	-0.196*	-0.107
	(0.101)	(0.113)	(0.108)
O levels/ Lower vocational	-0.099	-0.135	-0.046
	(0.106)	(0.116)	(0.111)
5+ O levels/ Middle vocational	-0.270**	-0.317**	-0.239*
	(0.121)	(0.129)	(0.126)
A levels	-0.239*	-0.286*	-0.210
	(0.146)	(0.150)	(0.148)
Highest vocational	-0.361**	-0.424**	-0.292*
	(0.148)	(0.156)	(0.154)
Degree	-0.390**	-0.464**	-0.385**
	(0.169)	(0.171)	(0.168)
Adulthood family background (at 23)			
Partner working	-0.066	-0.065	-0.089
	(0.063)	(0.063)	(0.065)
Partner unemployed or OLF	0.280**	0.338**	0.248*
	(0.137)	(0.150)	(0.144)
Region of residence at 33			
North	0.032	0.059	0.049
	(0.127)	(0.131)	(0.129)
North West	0.038	0.044	0.086
	(0.106)	(0.106)	(0.107)
Yorkshire & Humberside	-0.021	-0.002	0.010
	(0.108)	(0.111)	(0.110)
West Midlands	-0.025	-0.044	0.023
	(0.110)	(0.109)	(0.112)
East Midlands	0.163	0.181	0.260**
	(0.116)	(0.118)	(0.123)
East Anglia	0.076	0.096	0.154
	(0.139)	(0.145)	(0.145)
South West	-0.102	-0.075	0.005
	(0.107)	(0.110)	(0.113)
London	0.358**	0.289**	0.385**
	(0.150)	(0.140)	(0.151)
Wales	-0.014	0.010	0.048
	(0.124)	(0.127)	(0.130)
Scotland	-0.004	-0.026	0.017
	(0.111)	(0.110)	(0.110)
μ1	-0.404	-0.354	-0.419
	(0.235)	(0.248)	(0.249)
μ2	-0.052	0.303	0.610
	(0.235)	(0.249)	(0.249)
μ3	0.325	0.743	
	(0.235)	(0.249)	
μ4	0.601		
	(0.235)		
μ5	1.030		
	(0.236)		
Number of observations	1731	1731	1731
Pseudo R^2	0.0299	0.0416	0.0408
Pseudo-functional form	$\chi^2(3)=5.856$	**$\chi^2(3)=7.867$**	$\chi^2(3)=3.620$
Normality	$\chi^2(2)=5.280$	**$\chi^2(2)=9.125$**	$\chi^2(2)=2.379$
Heteroscedasticity	**$\chi^2(53)=95.761$**	**$\chi^2(53)=82.075$**	**$\chi^2(53)=85.661$**

Notes: see notes table 5.2a.

Table 5.9a: Ordered probit with indices excluding "unemployment" (men).

	Index 1	Index 2	Index 3
Childhood family background			
Teenage mother	-0.311**	-0.287**	-0.371**
	(0.114)	(0.116)	(0.116)
Father left school after 15	-0.020	-0.022	-0.051
	(0.082)	(0.080)	(0.083)
Mother left school after 15	-0.113	-0.131*	-0.128*
	(0.079)	(0.077)	(0.081)
Relative in contact with police (by 11)	0.045	0.158	-0.052
	(0.349)	(0.369)	(0.328)
Parents were tenants (16)	0.058	0.079	0.001
	(0.063)	(0.064)	(0.066)
Some parental incentive for school	0.008	0.016	-0.032
	(0.145)	(0.150)	(0.157)
Large parental incentive for school	0.054	0.032	0.035
	(0.136)	(0.139)	(0.146)
Always lived with both natural parents	0.068	0.036	-0.026
	(0.134)	(0.131)	(0.144)
Family were at risk of financial difficulties	0.279	0.268	0.333
	(0.275)	(0.267)	(0.270)
Family had financial difficulties once or more	0.011	0.027	-0.024
	(0.092)	(0.094)	(0.094)
Father was at risk of unemployment	0.145*	0.138	0.111
	(0.092)	(0.092)	(0.094)
Father was unemployed once or more	0.205**	0.213**	0.164*
	(0.104)	(0.106)	(0.107)
Non-working mother in couple (7)	0.028	0.011	0.024
	(0.066)	(0.066)	(0.068)
Lone working mother (7)	-0.413	-0.477	-0.367
	(0.359)	(0.354)	(0.357)
Lone non-working mother (7)	0.392	0.349	0.294
	(0.403)	(0.348)	(0.455)
Non-working mother in couple (11)	0.008	0.026	0.026
	(0.069)	(0.069)	(0.071)
Lone working mother (11)	0.080	0.042	-0.008
	(0.306)	(0.322)	(0.303)
Lone non-working mother (11)	0.149	0.195	0.191
	(0.424)	(0.410)	(0.489)
Non-working mother in couple (16)	0.024	0.029	0.048
	(0.070)	(0.070)	(0.073)
Lone working mother (16)	-0.285	-0.283	-0.385*
	(0.262)	(0.272)	(0.256)
Lone non-working mother (16)	-0.087	-0.183	-0.033
	(0.296)	(0.305)	(0.353)
Childhood personal characteristics			
Above average at maths test score (7)	0.078	0.090	0.074
	(0.064)	(0.064)	(0.066)
Above average at reading test score (7)	-0.134*	-0.138*	-0.184**
	(0.074)	(0.074)	(0.075)
Settled within one month at school (7)	-0.055	-0.065	-0.072
	(0.065)	(0.064)	(0.067)
Reported once below average knowledge	-0.003	0.025	-0.004
	(0.082)	(0.082)	(0.084)
Reported twice below average knowledge	0.181*	0.281**	0.256**
	(0.106)	(0.107)	(0.113)
Has been in care	0.169	0.084	0.067
	(0.218)	(0.215)	(0.219)
Reported badly behaved by school (16)	0.207**	0.155**	0.187**
	(0.067)	(0.067)	(0.069)
Reported badly behaved by mother (16)	0.117**	0.107*	0.103*
	(0.059)	(0.059)	(0.061)
Referred to a social agency (16)	0.202*	0.223**	0.209*
	(0.113)	(0.112)	(0.120)
Had contacts with the police (16)	-0.007	-0.014	-0.018
	(0.106)	(0.105)	(0.113)
Adulthood personal characteristics (at 23)			
Professional & intermediate	-0.026	0.001	0.056
	(0.101)	(0.098)	(0.101)

Table 5.9a (ctd.)

Skilled manuals	0.034	0.032	0.077
	(0.086)	(0.084)	(0.087)
Other manuals	0.326**	0.350**	0.381**
	(0.104)	(0.105)	(0.108)
Has children	0.236**	0.314**	0.281**
	(0.118)	(0.120)	(0.121)
Other education	-0.332**	-0.327**	-0.337**
	(0.128)	(0.128)	(0.136)
O levels/ Lower vocational	-0.325**	-0.321**	-0.369**
	(0.121)	(0.123)	(0.129)
5+ O levels/ Middle vocational	-0.424**	-0.480**	-0.491**
	(0.124)	(0.124)	(0.130)
A levels	-0.308*	-0.329**	-0.410**
	(0.160)	(0.159)	(0.166)
Highest vocational	-0.408**	-0.442**	-0.481**
	(0.147)	(0.145)	(0.153)
Degree	-0.353**	-0.445**	-0.461**
	(0.169)	(0.162)	(0.172)
Adulthood family background (at 23)			
Partner working	-0.066	-0.085	-0.030
	(0.068)	(0.067)	(0.069)
Partner unemployed or OLF	-0.036	-0.095	-0.047
	(0.126)	(0.126)	(0.126)
Region of residence at 33			
North	-0.138	-0.096	-0.105
	(0.120)	(0.122)	(0.127)
North West	-0.047	0.006	-0.063
	(0.116)	(0.117)	(0.120)
Yorkshire & Humberside	0.079	0.057	0.035
	(0.109)	(0.107)	(0.110)
West Midlands	0.003	-0.001	-0.050
	(0.117)	(0.116)	(0.117)
East Midlands	0.008	0.070	0.052
	(0.118)	(0.121)	(0.126)
East Anglia	-0.149	-0.111	-0.117
	(0.143)	(0.145)	(0.149)
South West	-0.035	-0.030	-0.011
	(0.111)	(0.110)	(0.114)
London	0.353**	0.399**	0.391**
	(0.146)	(0.140)	(0.150)
Wales	0.078	0.074	0.074
	(0.123)	(0.120)	(0.128)
Scotland	-0.045	-0.069	-0.059
	(0.111)	(0.109)	(0.115)
μ1	-0.079	-0.141	-0.287
	(0.250)	(0.245)	(0.266)
μ2	0.359	0.177	0.727
	(0.250)	(0.246)	(0.267)
μ3	0.705	0.530	
	(0.251)	(0.246)	
μ4	1.256	0.919	
	(0.250)	(0.246)	
μ5		1.412	
		(0.248)	
Number of observations	1614	1614	1614
Pseudo R^2	0.0443	0.0489	0.0649
Pseudo-functional form	$\chi^2(3)=2.453$	$\chi^2(3)=2.936$	$\chi^2(3)=2.395$
Normality	**$\chi^2(2)=7.631$**	**$\chi^2(2)=10.864$**	**$\chi^2(2)=7.277$**
Heteroscedasticity	$\chi^2(53)=57.530$	**$\chi^2(53)=102.08$**	$\chi^2(53)=63.727$

Notes: see notes table 5.2a.

Table 5.9b: Ordered probit with indices excluding "unemployment" (women).

	index1	index2	index3
Childhood family background			
Mother was younger than 20 at birth	-0.022	-0.023	-0.015
	(0.098)	(0.101)	(0.100)
Father left school after 15	0.034	-0.021	0.020
	(0.086)	(0.085)	(0.087)
Mother left school after 15	0.153*	0.167**	0.190**
	(0.082)	(0.083)	(0.084)
Had a relative in contact with police	0.426*	0.520**	0.406*
	(0.243)	(0.251)	(0.248)
Parents were tenants	0.072	0.073	0.051
	(0.065)	(0.065)	(0.066)
Parents wanted child to stay on at school once (+ missing)	-0.168	0.043	-0.013
	(0.145)	(0.147)	(0.150)
Parents wanted child to stay on at school twice or more	-0.206	-0.084	-0.138
	(0.138)	(0.138)	(0.140)
Always lived with both natural parents	-0.161	-0.300**	-0.282**
	(0.133)	(0.145)	(0.142)
Family never had financial difficulties (+missing)	-0.313	-0.221	-0.216
	(0.275)	(0.328)	(0.332)
Family had financial difficulties once or more	0.129	0.162*	0.143
	(0.086)	(0.090)	(0.091)
Father was never unemployed (+ missing response)	-0.030	-0.025	-0.006
	(0.097)	(0.100)	(0.100)
Father was unemployed once or more	0.004	-0.010	0.010
	(0.101)	(0.103)	(0.106)
Non-working mother in couple (7)	-0.018	-0.028	-0.045
	(0.064)	(0.066)	(0.066)
Lone working mother (7)	0.015	0.143	0.060
	(0.271)	(0.303)	(0.293)
Lone non-working mother (7)	0.448	0.279	0.813
	(0.359)	(0.399)	(0.566)
Non-working mother in couple (11)	-0.078	-0.105	-0.099
	(0.070)	(0.071)	(0.072)
Lone working mother (11)	-0.223	-0.413*	-0.484*
	(0.261)	(0.266)	(0.266)
Lone non-working mother (11)	0.081	-0.038	-0.209
	(0.328)	(0.355)	(0.342)
Non-working mother in couple (16)	0.084	0.103	0.084
	(0.069)	(0.071)	(0.072)
Lone working mother (16)	-0.085	-0.160	-0.151
	(0.236)	(0.244)	(0.238)
Lone non-working mother (16)	0.081	-0.052	0.155
	(0.238)	(0.252)	(0.257)
Childhood personal characteristics			
Above average at maths test score at 7	-0.025	-0.031	-0.016
	(0.064)	(0.064)	(0.064)
Above average at reading test score at 7	-0.080	-0.140*	-0.103
	(0.072)	(0.075)	(0.075)
Settled within one month at school when 7 years old	0.053	0.022	0.051
	(0.067)	(0.069)	(0.069)
Reported once to have below average knowledge	-0.114	-0.137	-0.103
	(0.080)	(0.082)	(0.083)
Reported twice to have below average knowledge	0.050	0.065	0.105
	(0.102)	(0.105)	(0.106)
Has been in care as a child	0.051	-0.071	-0.004
	(0.202)	(0.209)	(0.208)
Reported badly behaved by school at 16	0.084	0.087	0.068
	(0.069)	(0.071)	(0.070)
Reported badly behaved by mother at 16	0.095	0.080	0.099
	(0.059)	(0.060)	(0.061)
Referred to a social agency at 16	0.208*	0.114	0.144
	(0.115)	(0.116)	(0.118)
Had contacts with the police at 16	0.042	0.185	0.131
	(0.144)	(0.152)	(0.148)
Adulthood personal characteristics (at 23)			
Professional & intermediate	-0.013	0.102	0.064
	(0.094)	(0.096)	(0.096)

Table 5.9b (ctd.)

Skilled manuals	0.081	0.116	0.095
	(0.111)	(0.112)	(0.111)
Other manuals	0.304**	0.311**	0.281**
	(0.084)	(0.087)	(0.088)
Has children	0.172**	0.202**	0.151**
	(0.073)	(0.074)	(0.074)
Other education	-0.086	-0.187*	-0.178
	(0.105)	(0.111)	(0.113)
O levels/ Lower vocational	-0.065	-0.176	-0.185
	(0.108)	(0.115)	(0.115)
5+ O levels/ Middle vocational	-0.348**	-0.443**	-0.450**
	(0.125)	(0.130)	(0.131)
A levels	-0.220	-0.349**	-0.382**
	(0.156)	(0.158)	(0.158)
Highest vocational	-0.436**	-0.595**	-0.594**
	(0.156)	(0.162)	(0.162)
Degree	-0.525**	-0.663**	-0.704**
	(0.180)	(0.184)	(0.185)
Adulthood family background (at 23)			
Partner working	-0.209**	-0.187**	-0.181**
	(0.068)	(0.067)	(0.069)
Partner unemployed or OLF	0.163	0.263*	0.232
	(0.140)	(0.149)	(0.147)
Region of residence at 33			
North	0.161	0.124	0.161
	(0.125)	(0.131)	(0.132)
North West	0.006	-0.011	-0.039
	(0.112)	(0.114)	(0.115)
Yorkshire & Humberside	0.019	-1.43E-7	-0.008
	(0.111)	(0.113)	(0.112)
West Midlands	-0.009	-0.072	-0.042
	(0.111)	(0.113)	(0.115)
East Midlands	0.196	0.211*	0.222*
	(0.119)	(0.121)	(0.124)
East Anglia	0.147	0.156	0.161
	(0.135)	(0.137)	(0.142)
South West	-0.222*	-0.226*	-0.214*
	(0.112)	(0.115)	(0.116)
London	0.502**	0.396**	0.480**
	(0.147)	(0.143)	(0.151)
Wales	-0.034	0.006	-0.020
	(0.131)	(0.132)	(0.134)
Scotland	0.191*	0.098	0.063
	(0.121)	(0.123)	(0.122)
$\mu 1$	-0.146	-0.319	-0.320
	(0.240)	(0.250)	(0.251)
$\mu 2$	0.312	0.139	0.674
	(0.240)	(0.250)	(0.252)
$\mu 3$	0.388	0.737	
	(0.240)	(0.251)	
$\mu 4$	0.738		
	(0.241)		
$\mu 5$	1.265		
	(0.245)		
Observations	1742	1742	1742
Pseudo R^2	0.0550	0.0715	0.0796
Pseudo-functional form	$\chi^2(3)=1.750$	$\chi^2(3)=2.228$	$\chi^2(3)=0.868$
Normality	$\chi^2(2)=1.248$	$\chi^2(2)=2.611$	$\chi^2(2)=2.195$
Heteroscedasticity	**$\chi^2(53)=90.664$**	$\chi^2(53)=67.230$	$\chi^2(53)=56.991$

Table 5.10a: Ordered probit Economic index (men).

	Index 1a	Index 2a	Index 3a
Childhood family background			
Teenage mother	-0.113	-0.111	-0.108
	(0.119)	(0.114)	(0.117)
Father left school after 15	-0.037	-0.019	-0.022
	(0.093)	(0.091)	(0.092)
Mother left school after 15	-0.035	-0.061	-0.027
	(0.087)	(0.085)	(0.087)
Relative in contact with police (by 11)	0.442	0.199	0.248
	(0.360)	(0.308)	(0.319)
Parents were tenants (16)	0.160**	0.174**	0.168**
	(0.069)	(0.068)	(0.068)
Some parental incentive for school	-0.099	-0.062	-0.073
	(0.144)	(0.141)	(0.144)
Large parental incentive for school	-0.200	-0.147	-0.188
	(0.133)	(0.130)	(0.133)
Always lived with both natural parents	-0.028	-0.031	-0.059
	(0.145)	(0.143)	(0.149)
Family were at risk of financial difficulties	-0.026	-0.081	-0.119
	(0.393)	(0.383)	(0.355)
Family had financial difficulties once or more	0.094	0.111	0.115
	(0.096)	(0.094)	(0.095)
Father was at risk of unemployment	0.041	0.073	0.051
	(0.102)	(0.102)	(0.102)
Father was unemployed once or more	0.364**	0.335**	0.369**
	(0.111)	(0.106)	(0.108)
Non-working mother in couple (7)	-0.070	-0.076	-0.069
	(0.069)	(0.069)	(0.070)
Lone working mother (7)	-0.432	-0.455	-0.401
	(0.382)	(0.386)	(0.415)
Lone non-working mother (7)	0.822**	0.575*	0.508*
	(0.343)	(0.318)	(0.290)
Non-working mother in couple (11)	0.075	0.084	0.075
	(0.075)	(0.074)	(0.074)
Lone working mother (11)	0.079	0.046	-0.064
	(0.364)	(0.372)	(0.392)
Lone non-working mother (11)	0.300	0.342	0.157
	(0.368)	(0.355)	(0.319)
Non-working mother in couple (16)	-0.021	-0.029	-0.012
	(0.077)	(0.076)	(0.077)
Lone working mother (16)	-0.257	-0.211	-0.157
	(0.258)	(0.268)	(0.283)
Lone non-working mother (16)	-0.593*	-0.603**	-0.574*
	(0.321)	(0.314)	(0.326)
Childhood personal characteristics			
Above average at maths test score (7)	0.051	0.064	0.061
	(0.069)	(0.068)	(0.069)
Above average at reading test score (7)	-0.002	0.0003	0.009
	(0.080)	(0.079)	(0.080)
Quick to settle in class (7)	-0.044	-0.058	-0.041
	(0.068)	(0.067)	(0.067)
Reported once below average knowledge	-0.052	-0.036	-0.045
	(0.088)	(0.086)	(0.088)
Reported twice below average knowledge	0.117	0.195	0.141
	(0.115)	(0.112)	(0.113)
Has been in care	0.204	0.154	0.260
	(0.209)	(0.201)	(0.209)
Reported badly behaved by school (16)	0.089	0.056	0.098
	(0.072)	(0.071)	(0.071)
Reported badly behaved by mother (16)	0.095*	0.115*	0.114*
	(0.063)	(0.062)	(0.062)
Referred to a social agency (16)	0.221*	0.126	0.166
	(0.128)	(0.122)	(0.128)
Had contacts with the police (16)	-0.005	0.031	0.026
	(0.112)	(0.110)	(0.115)
Adulthood personal characteristics (at 23)			
Professional & intermediate	-0.069	-0.060	-0.069
	(0.108)	(0.108)	(0.108)

Table 5.10a (ctd.)

Skilled manuals	0.026	-0.025	-0.009
	(0.093)	(0.093)	(0.092)
Other manuals	0.397**	0.356**	0.388**
	(0.113)	(0.111)	(0.112)
Has children	0.362**	0.367**	0.373**
	(0.126)	(0.126)	(0.128)
Other education	-0.011	-0.090	-0.061
	(0.133)	(0.129)	(0.130)
O levels/ Lower vocational	-0.120	-0.166	-0.172
	(0.130)	(0.127)	(0.129)
5+ O levels/ Middle vocational	-0.286**	-0.363**	-0.355**
	(0.134)	(0.130)	(0.132)
A levels	-0.132	-0.211	-0.201
	(0.171)	(0.166)	(0.170)
Highest vocational	-0.166	-0.258**	-0.238
	(0.163)	(0.158)	(0.160)
Degree	-0.274*	-0.361**	-0.345*
	(0.180)	(0.175)	(0.178)
Adulthood family background (at 23)			
Partner working	-0.219**	-0.196**	-0.244**
	(0.074)	(0.074)	(0.075)
Partner unemployed or OLF	-0.119	-0.136	-0.155
	(0.130)	(0.131)	(0.133)
Region of residence at 33			
North	0.202*	0.141	0.210*
	(0.126)	(0.122)	(0.126)
North West	0.065	0.093	0.092
	(0.127)	(0.128)	(0.127)
Yorkshire & Humberside	0.209*	0.208*	0.231**
	(0.113)	(0.110)	(0.112)
West Midlands	0.057	0.071	0.061
	(0.122)	(0.120)	(0.122)
East Midlands	0.262**	0.264**	0.262**
	(0.129)	(0.126)	(0.128)
East Anglia	-0.343*	-0.319*	-0.370**
	(0.175)	(0.179)	(0.180)
South West	-0.137	-0.101	-0.153
	(0.123)	(0.123)	(0.123)
London	0.441**	0.425**	0.390**
	(0.148)	(0.141)	(0.141)
Wales	0.192	0.159	0.189
	(0.132)	(0.128)	(0.131)
Scotland	0.048	0.043	0.062
	(0.118)	(0.116)	(0.117)
$\mu 1$	0.203	0.166	0.148
	(0.261)	(0.255)	(0.262)
$\mu 2$	1.110	0.700	1.231
	(0.261)	(0.255)	(0.263)
$\mu 3$	1.275	1.100	1.928
	(0.262)	(0.256)	(0.270)
$\mu 4$		1.536	
		(0.260)	
Number of observations	1610	1610	1610
Pseudo R^2	0.0768	0.0635	0.0848
Pseudo-functional form	$\chi^2(3)=6.461$	$\chi^2(3)=5.267$	$\chi^2(3)=5.507$
Normality	$\chi^2(2)=4.957$	$\chi^2(2)=1.148$	**$\chi^2(2)=6.062$**
Heteroscedasticity	**$\chi^2(53)=77.731$**	**$\chi^2(53)=72.827$**	**$\chi^2(53)=87.154$**

Table 5.10b: Ordered probit Cultural index (men).

	Index 1b	Index 2b	Index 3b
Childhood family background			
Teenage mother	-0.340**	-0.383**	-0.394**
	(0.119)	(0.120)	(0.119)
Father left school after 15	0.006	-0.017	0.000
	(0.086)	(0.085)	(0.087)
Mother left school after 15	-0.058	-0.102	-0.093
	(0.084)	(0.083)	(0.085)
Relative in contact with police (by 11)	0.145	-0.005	0.123
	(0.363)	(0.342)	(0.358)
Parents were tenants (16)	-0.087	-0.152**	-0.137**
	(0.066)	(0.068)	(0.069)
Some parental incentive for school	-0.028	-0.031	-0.075
	(0.158)	(0.158)	(0.168)
Large parental incentive for school	0.064	0.045	0.014
	(0.148)	(0.146)	(0.156)
Always lived with both natural parents	-0.186	-0.189	-0.186
	(0.146)	(0.145)	(0.144)
Family were at risk of financial difficulties	0.097	0.079	0.054
	(0.248)	(0.236)	(0.241)
Family had financial difficulties once or more	-0.127	-0.133	-0.160
	(0.093)	(0.094)	(0.097)
Father was at risk of unemployment	0.045	-0.004	0.045
	(0.096)	(0.094)	(0.096)
Father was unemployed once or more	0.070	0.004	0.057
	(0.111)	(0.111)	(0.115)
Non-working mother in couple (7)	0.015	0.009	0.024
	(0.067)	(0.067)	(0.069)
Lone working mother (7)	-0.324	-0.211	-0.268
	(0.337)	(0.364)	(0.359)
Lone non-working mother (7)	-0.658	-0.692	-0.430
	(0.554)	(0.540)	(0.630)
Non-working mother in couple (11)	-0.101	-0.062	-0.073
	(0.071)	(0.072)	(0.072)
Lone working mother (11)	-0.079	-0.054	-0.172
	(0.292)	(0.309)	(0.300)
Lone non-working mother (11)	0.094	0.192	0.170
	(0.501)	(0.494)	(0.513)
Non-working mother in couple (16)	0.095	0.132*	0.095
	(0.074)	(0.073)	(0.075)
Lone working mother (16)	-0.314	-0.333	-0.383*
	(0.235)	(0.234)	(0.230)
Lone non-working mother (16)	0.131	0.271	0.333
	(0.330)	(0.347)	(0.353)
Childhood personal characteristics			
Above average at maths test score (7)	0.025	0.012	0.034
	(0.067)	(0.066)	(0.068)
Above average at reading test score (7)	-0.248**	-0.310**	-0.271**
	(0.074)	(0.073)	(0.074)
Quick to settle (7)	-0.060	-0.084	-0.057
	(0.066)	(0.066)	(0.068)
Reported once below average knowledge	-0.030	-0.020	-0.016
	(0.084)	(0.084)	(0.086)
Reported twice below average knowledge	0.158	0.217**	0.174*
	(0.105)	(0.108)	(0.109)
Has been in care	0.145	0.050	0.170
	(0.186)	(0.186)	(0.197)
Reported badly behaved by school (16)	0.227**	0.201**	0.207**
	(0.070)	(0.070)	(0.071)
Reported badly behaved by mother (16)	0.053	0.047	0.079
	(0.061)	(0.061)	(0.062)
Referred to a social agency (16)	0.046	0.034	0.066
	(0.118)	(0.119)	(0.122)
Had contacts with the police (16)	0.073	0.020	0.047
	(0.112)	(0.113)	(0.115)
Adulthood personal characteristics			
Professional & intermediate	0.051	0.118	0.093
	(0.105)	(0.101)	(0.105)

Table 5.10b (ctd.)

Skilled manuals	0.154*	0.232**	0.176*
	(0.090)	(0.088)	(0.090)
Other manuals	0.260**	0.311**	0.279**
	(0.107)	(0.104)	(0.108)
Has children	-0.054	0.001	0.006
	(0.111)	(0.111)	(0.113)
Other education	-0.262**	-0.304**	-0.318**
	(0.124)	(0.127)	(0.126)
O levels/ Lower vocational	-0.298**	-0.361**	-0.346**
	(0.121)	(0.124)	(0.125)
5+ O levels/ Middle vocational	-0.313**	-0.413**	-0.391**
	(0.124)	(0.125)	(0.127)
A levels	-0.433**	-0.511**	-0.502**
	(0.164)	(0.165)	(0.168)
Highest vocational	-0.400**	-0.467**	-0.477**
	(0.150)	(0.152)	(0.152)
Degree	-0.281*	-0.402**	-0.392**
	(0.173)	(0.167)	(0.173)
Adulthood family background			
Partner working	-0.020	0.034	0.019
	(0.070)	(0.070)	(0.071)
Partner unemployed or OLF	0.089	0.068	0.081
	(0.119)	(0.117)	(0.119)
Region			
North	-0.243**	-0.191	-0.209
	(0.121)	(0.124)	(0.126)
North West	-0.061	-0.058	-0.098
	(0.121)	(0.121)	(0.123)
Yorkshire & Humberside	-0.058	-0.096	-0.108
	(0.110)	(0.107)	(0.111)
West Midlands	-0.103	-0.141	-0.134
	(0.117)	(0.116)	(0.117)
East Midlands	-0.166	-0.110	-0.121
	(0.122)	(0.129)	(0.130)
East Anglia	-0.111	-0.017	-0.122
	(0.157)	(0.162)	(0.157)
South West	-0.027	-0.011	-0.005
	(0.112)	(0.111)	(0.116)
South East			
London	0.191	0.182	0.155
	(0.156)	(0.152)	(0.153)
Wales	0.072	0.081	0.048
	(0.135)	(0.134)	(0.135)
Scotland	-0.027	-0.085	-0.067
	(0.124)	(0.122)	(0.125)
μ1	-0.231	-0.359	-0.336
	(0.270)	(0.271)	(0.279)
μ2	0.251	-0.045	0.975
	(0.270)	(0.271)	(0.281)
μ3	1.231	0.584	2.111
	(0.274)	(0.272)	(0.294)
μ4		0.974	
		(0.273)	
Number of observations	1657	1657	1657
Pseudo R^2	0.0391	0.0443	0.0540
Pseudo-functional form	$\chi^2(3)=2.566$	$\chi^2(3)=2.494$	$\chi^2(3)=3.430$
Normality	$\chi^2(2)=0.666$	$\chi^2(2)=\mathbf{14.458}$	$\chi^2(2)=\mathbf{9.530}$
Heteroscedasticity	$\chi^2(53)=\mathbf{80.615}$	$\chi^2(53)=\mathbf{75.787}$	$\chi^2(53)=\mathbf{99.021}$

Table 5.11a: Ordered probit Economic index (women).

	Index 1a	Index 2a	Index 3a
Childhood family background			
Teenage mother	-0.097	-0.111	-0.132
	(0.110)	(0.107)	(0.108)
Father left school after 15	0.046	0.021	0.037
	(0.086)	(0.086)	(0.088)
Mother left school after 15	-0.036	-0.042	-0.048
	(0.087)	(0.088)	(0.088)
Relative in contact with police (by 11)	0.461*	0.606*	0.581*
	(0.303)	(0.316)	(0.314)
Parents were tenants (16)	0.214**	0.180**	0.183**
	(0.068)	(0.067)	(0.068)
Some parental incentive for school	-0.105	0.009	-0.061
	(0.157)	(0.152)	(0.154)
Large parental incentive for school	-0.030	0.053	0.016
	(0.146)	(0.140)	(0.142)
Always lived with both natural parents	-0.314**	-0.397**	-0.364**
	(0.146)	(0.148)	(0.145)
Family were at risk of financial difficulties	-0.178	-0.108	-0.122
	(0.268)	(0.285)	(0.285)
Family had financial difficulties once or more	-0.046	0.024	-0.021
	(0.094)	(0.094)	(0.093)
Father was at risk of unemployment	0.018	-0.010	-0.001
	(0.101)	(0.099)	(0.099)
Father was unemployed once or more	0.061	0.070	0.072
	(0.101)	(0.102)	(0.101)
Non-working mother in couple (7)	0.119*	0.118*	0.130*
	(0.068)	(0.068)	(0.068)
Lone working mother (7)	-0.049	0.061	-0.013
	(0.251)	(0.253)	(0.244)
Lone non-working mother (7)	-0.862	-0.810	-0.733
	(0.748)	(0.809)	(0.842)
Non-working mother in couple (11)	-0.114	-0.137*	-0.141*
	(0.074)	(0.072)	(0.073)
Lone working mother (11)	-0.118	-0.194	-0.167
	(0.247)	(0.241)	(0.242)
Lone non-working mother (11)	0.008	-0.130	-0.228
	(0.342)	(0.321)	(0.305)
Non-working mother in couple (16)	0.137**	0.148**	0.152**
	(0.073)	(0.071)	(0.072)
Lone working mother (16)	-0.072	-0.153	-0.102
	(0.222)	(0.227)	(0.223)
Lone non-working mother (16)	-0.087	-0.116	-0.097
	(0.256)	(0.259)	(0.250)
Childhood personal characteristics			
Above average at maths test score (7)	0.005	0.003	0.019
	(0.066)	(0.065)	(0.065)
Above average at reading test score (7)	-0.076	-0.093	-0.077
	(0.077)	(0.076)	(0.076)
Quick to settle (7)	-0.053	-0.063	-0.064
	(0.069)	(0.068)	(0.068)
Reported once below average knowledge	-0.132	-0.169*	-0.150*
	(0.088)	(0.086)	(0.088)
Reported twice below average knowledge	0.023	-0.002	0.021
	(0.110)	(0.108)	(0.109)
Has been in care	-0.084	-0.180	-0.125
	(0.206)	(0.211)	(0.210)
Reported badly behaved by school (16)	0.007	0.040	0.015
	(0.074)	(0.074)	(0.074)
Reported badly behaved by mother (16)	0.037	0.036	0.021
	(0.061)	(0.060)	(0.061)
Referred to a social agency (16)	0.154	0.066	0.069
	(0.127)	(0.124)	(0.125)
Had contacts with the police (16)	0.119	0.201	0.192
	(0.161)	(0.160)	(0.161)
Adulthood personal characteristics (at 23)			
Professional & intermediate	-0.107	0.004	-0.038
	(0.095)	(0.098)	(0.098)

Table 5.11a (ctd.)

Skilled manuals	0.065	0.128	0.115
	(0.110)	(0.111)	(0.111)
Other manuals	0.384**	0.367**	0.401**
	(0.090)	(0.088)	(0.090)
Has children	0.173**	0.199**	0.161**
	(0.076)	(0.078)	(0.077)
Other education	0.030	-0.096	-0.047
	(0.122)	(0.120)	(0.121)
O levels/ Lower vocational	0.030	-0.071	-0.028
	(0.122)	(0.122)	(0.122)
5+ O levels/ Middle vocational	-0.178	-0.244*	-0.206
	(0.134)	(0.134)	(0.135)
A levels	-0.065	-0.168	-0.128
	(0.164)	(0.162)	(0.163)
Highest vocational	-0.199	-0.357**	-0.306*
	(0.163)	(0.162)	(0.162)
Degree	-0.083	-0.209	-0.161
	(0.178)	(0.176)	(0.177)
Adulthood family background (at 23)			
Partner working	-0.177**	-0.148**	-0.168**
	(0.068)	(0.067)	(0.068)
Partner unemployed or OLF	0.276*	0.366**	0.281*
	(0.147)	(0.150)	(0.147)
Region of residence at 33			
North	0.151	0.135	0.167
	(0.139)	(0.140)	(0.142)
North West	0.276**	0.201*	0.228**
	(0.112)	(0.108)	(0.110)
Yorkshire & Humberside	0.048	0.054	0.054
	(0.120)	(0.118)	(0.119)
West Midlands	0.151	0.157	0.204*
	(0.115)	(0.115)	(0.118)
East Midlands	0.128	0.151	0.131
	(0.130)	(0.130)	(0.129)
East Anglia	0.049	0.069	0.056
	(0.156)	(0.154)	(0.156)
South West	-0.024	-0.002	0.014
	(0.119)	(0.120)	(0.121)
London	0.267*	0.217	0.218
	(0.156)	(0.148)	(0.149)
Wales	0.124	0.116	0.123
	(0.134)	(0.132)	(0.134)
Scotland	0.474**	0.363**	0.382**
	(0.116)	(0.112)	(0.113)
$\mu 1$	0.139	0.036	0.063
	(0.261)	(0.260)	(0.262)
$\mu 2$	0.913	0.567	1.118
	(0.262)	(0.260)	(0.264)
$\mu 3$		1.021	
		(0.262)	
Number of observations	1739	1739	1739
Pseudo R^2	0.0611	0.0550	0.0605
Pseudo-functional form	$\chi^2(3)=1.434$	$\chi^2(3)=0.305$	$\chi^2(3)=0.901$
Normality	**$\chi^2(2)=8.067$**	**$\chi^2(2)=7.648$**	$\chi^2(2)=4.400$
Heteroscedasticity	**$\chi^2(53)=90.435$**	**$\chi^2(53)=111.198$**	**$\chi^2(53)=111.918$**

Table 5.11b: Ordered probit Cultural index (women).

	Index 1b	Index 2b	Index 3b
Childhood family background			
Teenage mother	-0.026	-0.016	0.019
	(0.098)	(0.103)	(0.106)
Father left school after 15	0.049	0.005	0.030
	(0.093)	(0.089)	(0.093)
Mother left school after 15	0.244**	0.233**	0.249**
	(0.087)	(0.084)	(0.087)
Relative in contact with police (by 11)	0.532*	0.452*	0.580**
	(0.285)	(0.276)	(0.295)
Parents were tenants (16)	-0.050	-0.030	-0.050
	(0.072)	(0.071)	(0.073)
Some parental incentive for school	-0.120	-0.063	-0.053
	(0.138)	(0.143)	(0.142)
Large parental incentive for school	-0.271**	-0.224*	-0.252*
	(0.130)	(0.134)	(0.133)
Always lived with both natural parents	-0.181	-0.120	-0.200
	(0.152)	(0.148)	(0.159)
Family were at risk of financial difficulties	-0.406	-0.510	-0.556
	(0.426)	(0.403)	(0.400)
Family had financial difficulties once or more	0.121	0.140	0.141
	(0.091)	(0.094)	(0.094)
Father was at risk of unemployment	-0.079	-0.103	-0.084
	(0.107)	(0.102)	(0.104)
Father was unemployed once or more	-0.002	-0.045	-0.014
	(0.110)	(0.109)	(0.111)
Non-working mother in couple (7)	-0.012	-0.036	-0.068
	(0.070)	(0.070)	(0.072)
Lone working mother (7)	-0.026	-0.087	-0.043
	(0.311)	(0.302)	(0.323)
Lone non-working mother (7)	1.996**	1.261**	1.282**
	(0.656)	(0.410)	(0.498)
Non-working mother in couple (11)	-0.009	-0.002	0.021
	(0.079)	(0.077)	(0.078)
Lone working mother (11)	-0.531*	-0.465*	-0.606**
	(0.297)	(0.295)	(0.296)
Lone non-working mother (11)	-0.222	-0.229	-0.235
	(0.354)	(0.351)	(0.385)
Non-working mother in couple (16)	-0.111	-0.097	-0.109
	(0.077)	(0.077)	(0.078)
Lone working mother (16)	-0.122	-0.145	-0.215
	(0.268)	(0.257)	(0.261)
Lone non-working mother (16)	0.164	0.102	0.174
	(0.261)	(0.247)	(0.266)
Childhood personal characteristics			
Above average at maths test score (7)	0.032	0.007	0.010
	(0.069)	(0.068)	(0.070)
Above average at reading test score (7)	-0.039	-0.120	-0.075
	(0.079)	(0.079)	(0.080)
Quick to settle (7)	0.099	0.069	0.062
	(0.071)	(0.072)	(0.073)
Reported once below average knowledge	-0.002	0.031	-0.002
	(0.086)	(0.087)	(0.088)
Reported twice below average knowledge	0.255**	0.329**	0.262**
	(0.106)	(0.108)	(0.109)
Has been in care	0.191	0.221	0.257
	(0.193)	(0.211)	(0.213)
Reported badly behaved by school (16)	0.057	0.053	0.030
	(0.076)	(0.077)	(0.077)
Reported badly behaved by mother (16)	0.087	0.076	0.079
	(0.065)	(0.065)	(0.066)
Referred to a social agency (16)	0.172	0.096	0.121
	(0.126)	(0.122)	(0.124)
Had contacts with the police (16)	-0.042	0.052	0.039
	(0.153)	(0.155)	(0.158)
Adulthood personal characteristics (at 23)			
Professional & intermediate	-0.078	-0.012	-0.040
	(0.107)	(0.104)	(0.105)

Table 5.11b (ctd.)

Skilled manuals	0.059	0.078	0.084
	(0.112)	(0.114)	(0.116)
Other manuals	0.129	0.189**	0.126
	(0.091)	(0.092)	(0.092)
Has children	-0.137*	-0.126*	-0.146*
	(0.079)	(0.081)	(0.081)
Other education	-0.101	-0.078	-0.154
	(0.108)	(0.118)	(0.115)
O levels/ Lower vocational	-0.053	-0.071	-0.110
	(0.114)	(0.119)	(0.120)
5+ O levels/ Middle vocational	-0.238*	-0.248*	-0.325**
	(0.133)	(0.139)	(0.139)
A levels	-0.198	-0.208	-0.298*
	(0.159)	(0.162)	(0.162)
Highest vocational	-0.139	-0.166	-0.266
	(0.167)	(0.173)	(0.170)
Degree	-0.409**	-0.451**	-0.543**
	(0.198)	(0.195)	(0.196)
Adulthood family background (at 23)			
Partner working	-0.115	-0.095	-0.115
	(0.072)	(0.071)	(0.072)
Partner unemployed or OLF	-0.070	-0.116	-0.036
	(0.161)	(0.158)	(0.165)
Region of residence at 33			
North	0.163	0.048	0.168
	(0.143)	(0.141)	(0.145)
North West	-0.041	-0.043	-0.039
	(0.122)	(0.127)	(0.126)
Yorkshire & Humberside	0.032	-0.076	-0.003
	(0.122)	(0.121)	(0.122)
West Midlands	-0.133	-0.235**	-0.170
	(0.121)	(0.119)	(0.121)
East Midlands	0.234*	0.185	0.256*
	(0.131)	(0.133)	(0.136)
East Anglia	0.117	0.037	0.164
	(0.147)	(0.149)	(0.155)
South West	-0.180	-0.267**	-0.164
	(0.118)	(0.120)	(0.123)
London	0.479**	0.365**	0.391**
	(0.162)	(0.151)	(0.154)
Wales	-0.055	-0.039	-0.030
	(0.137)	(0.141)	(0.139)
Scotland	-0.110	-0.228*	-0.145
	(0.132)	(0.129)	(0.132)
$\mu 1$	0.146	0.124	-0.008
	(0.254)	(0.260)	(0.260)
$\mu 2$	1.036	0.776	1.360
	(0.254)	(0.260)	(0.264)
$\mu 3$		1.075	
		(0.262)	
Number of observations	1786	1786	1786
Pseudo R^2	0.0489	0.0497	0.0605
Pseudo-functional form	$\chi^2(3)=4.004$	$\chi^2(3)=1.092$	$\chi^2(3)=1.252$
Normality	**$\chi^2(2)=1604.572$**	**$\chi^2(2)=10.854$**	$\chi^2(2)=0.516$
Heteroscedasticity	**$\chi^2(53)=140.315$**	**$\chi^2(53)=92.719$**	**$\chi^2(53)=82.302$**

Table 5.12a: Predicted probabilities for index 1 for men.

	Economic integration	Maximum economic exclusion	Cultural integration	Maximum cultural exclusion
Base person 1	0.626	0.082	0.628	0.037
Base person 1 but was reported and referred.	0.469	0.160	0.472	0.082
Base person 1 but father was unemployed repeatedly and family had financial difficulties repeatedly	0.445	0.175	0.649	0.032
Opposite of base person 1	0.296	0.296	0.494	0.074
Base person 2	0.254	0.341	0.393	0.117
Base person 2 but person has a degree	0.349	0.247	0.504	0.070
Base person 3	0.272	0.321	0.498	0.072
Base person 3 but has a partner who works	0.349	0.247	0.506	0.070
Base person 3 but has a partner who does not work	0.313	0.280	0.463	0.085

Notes:

(1) Predicted probabilities are calculated at the means of variables except for specific dummies set to 0 or 1 (see following notes).

(2) Base person 1: father never unemployed, family never had financial difficulties, child was not reported badly behaved (by either school or parents) and was not in contact with authorities (police or social services). All other variables at their actual values.

(3) Base person 2: father repeatedly unemployed, family repeatedly had financial difficulties, child was reported badly behaved (by either school or parents) and was in contact with authorities (police or social services) and child has no education. All other variables at their actual values.

(4) Base person 3: father repeatedly unemployed, family repeatedly had financial difficulties, child was reported badly behaved (by either school or parents) and was in contact with authorities (police or social services) and person has no partner at 23. All other variables at their actual values.

Table 5.12b: Predicted probabilities for index 1 for women.

	Economic integration	Maximum economic exclusion	Cultural integration	Maximum cultural exclusion
Base person 1	0.614	0.244	0.729	0.067
Base person 1 but was reported and referred.	0.489	0.228	0.631	0.110
Base person 1 but father was unemployed repeatedly and family had financial difficulties repeatedly	0.608	0.148	0.688	0.084
Opposite of base person 1	0.483	0.233	0.585	0.135
Base person 2	0.467	0.245	0.535	0.164
Base person 2 but person has a degree	0.500	0.219	0.691	0.083
Base person 3	0.451	0.257	0.558	0.150
Base person 3 but has a partner who works	0.522	0.204	0.603	0.125
Base person 3 but has a partner who does not work	0.345	0.354	0.586	0.134

Notes: see notes of table 5.12a

Appendix A: Variables' definitions

Paper's denomination	Base category	Definition
Childhood family background		
Teenage mother	Older than 20	Mother was twenty or younger at delivery.
Father, mother left school after 15	Before 15	0 = 15 years old or younger, 1 = 16 years old or older.
Had a relative in contact with police (by 11)	Did not	A family member has been in prison, in contact with police liaison, probation (for crime), police. (Reported when the child was 11 years old)
Parents were tenants (16)	Were owner or other	Parents were tenants when the child was 16 years old.
Some parental incentive for school	Never wanted child to stay on at school (always answered no)	Question: Do the parents want the child to stay on at school? Sweep 1: Stay on at secondary school. Sweep 2: Stay on longer. Sweep 3: Stay in some form of full time education beyond minimum leaving age. Answered yes once + missing responses in other waves
Large parental incentive for school		Answered yes at least twice
Always lived with both natural parents	Never or sometimes	Question: Does the child live with his/her own mother (father)?
Family were at risk financial difficulties	Never in financial difficulties (no in three waves)	Questions: Sweep 1: View of the interviewer, Sweep 2 and 3: Question to the parents (Have you had any financial difficulties over the past 12 months?). Missing answers + no across the three waves.
Family had financial difficulties once or more		Said yes at least in one of the waves
Father was at risk unemployed	Never unemployed (no in three waves)	Questions: Sweep 1: View of the interviewer. Sweep 2 and 3: father or male head has been unemployed for more than 6 weeks over the past 12 months. Missing answers + no (across three waves)
Father was unemployed once or more		Said yes at least in one of the waves
Non-working mother in couple (7, 11, 16) Lone working mother (7, 11, 16) Lone non-working mother (7, 11, 16) Mother works (7, 11, 16) Single mother (7, 11, 16)	Working mother in couple (7, 11, 16) Does not work In couple	Questions: Sweep 1: Any paid work since child's birth (before and/or after the child started school). Sweep 2: Any paid work outside home since child was 7. Sweep 3: Does the mother do paid work? Combined with information on whether there is no father or male head living in the household.
Childhood personal characteristics		
Above average at maths test score (7) Above average at reading test score (7)	Below average	Scores from reading and arithmetic tests held when the child is 7. Marks go from 0 to 10 for arithmetic's and from 0 to 30 for reading. 0 = below (same sex) average, 1 = above (same sex) average.
Quick to settle (7)	Not quick	The child adapted to being in class within one month when they started school at 7 years old. Information obtained from the school.
Reported once below average knowledge Reported twice below average knowledge	Never reported below average	The teacher thinks the child has an (exceptional or above) average general knowledge. Reports when the child is 7 and 11 years old.
Has been in care	Never in care	Has the child ever been in care with a Local Authority or a Voluntary Society. 1 = yes, 0 = no/ NA.
Reported badly behaved by school (16)	Not reported	Index of social behaviour when the child is sixteen. It is equal to 1 if the child is found to have (often and/or sometimes) shown any of the following behaviours: irritable, fighting with others, destructive with his own and others' belongings, disobedient, lies, bullies other

		children, truant from school, has stolen on one or more occasions in the past twelve months, resentful or aggressive when corrected. It is equal to 0 if the child never shows any of these characteristics.
Reported badly behaved by mother (16)	Not reported	Index of social behaviour when the child is sixteen. It is equal to 1 if the child is found to have (often and/or sometimes) shown any of the following behaviours: irritable, fighting with others, destructive with his own and others' belongings, disobedient, lies, bullies other children. It is equal to 0 if the child never shows any of these characteristics.
Referred to a social agency (16)	Not referred	It is equal to 0 if the child was not referred to an agency (because of difficulties that have affected their educational progress or behaviour) or to 1 if she/he was. List of agencies: Social services or social work department (incl. children's department), educational welfare department, police or probation department, child guidance clinic.
Had contacts with the police (16)	No contacts	Has the child been in contact with the police at 16. 0 = no, 1 = yes. (We combined the information obtained from the school and the parents).
Adulthood personal characteristics		
Professional & intermediate Skilled manuals Other manuals	Skilled non-manuals	Occupation at 23 years old.
Has children	Does not	The cohort member has natural living children at 23 years old.
Other education O levels/ Lower vocational 5+ O levels/ Middle vocational A levels Highest vocational Degree	No education	Highest qualification obtained by the age of 23.
Adulthood family background		
Partner working Partner unemployed or OLF	No partner	Whether the cohort member lives with somebody at 33 years old (as married or not) and situation of the partner. If he or she does, whether the partner is working or not.
Region	South East	Region lived in at 33 years old: 11 regions. North, North West, East and West Riding, North Midlands, Eastern, London and South East, South, South West, Midlands, Wales and Scotland.

Appendix B: Weights given to variables included in indices 1 and 2.

Table B.5.1: Index 1, well-being equations.
Dependent variable: Life satisfaction score

	Men		Women	
	Coeff.	Std. Err.	Coeff.	Std. Err.
No vote	0.016	0.035	0.116	0.036
No car	0.195	0.044	0.412	0.043
Homeless	0.131	0.084	0.270	0.077
Unemployed	0.255	0.034	0.085	0.034
Problems writing	0.142	0.047	0.094	0.063
No phone	0.158	0.061	0.076	0.062
Alcohol problems	0.290	0.040	0.309	0.054
Arrears	0.282	0.057	0.291	0.055
μ1	-1.278	0.030	-1.054	0.026
μ2	-0.680	0.025	-0.445	0.022
μ3	0.320	0.023	0.406	0.022
μ4	1.013	0.026	0.974	0.024
μ5	1.369	0.029	1.281	0.026
μ6	1.817	0.035	1.806	0.033
μ7	2.163	0.042	2.132	0.040
μ8	2.592	0.057	2.452	0.051
μ9	2.866	0.073	2.735	0.065
μ10	3.055	0.089	2.929	0.080
Observations	4892		5164	
Pseudo R squared	0.015		0.013	

Note: these results are presented for reference only. The specifications do not contain any additional controls.

Table B.5.2: Index 2, scoring coefficients based on first component.

	Men	Women
No vote	0.179	0.261
No car	0.472	0.528
Homeless	0.287	0.286
Unemployed	0.428	0.203
Problems writing	0.195	0.257
No phone	0.512	0.524
Alcohol problems	0.250	0.222
Arrears	0.341	0.374
Observations	5277	5449
Contribution of first component (per cent)	20.55	19.43

Note: the last row shows the proportion of the total variance of the eight variables which is explained by the first component.

Appendix C: Summary statistics

Table C.5.1: Summary statistics for men

	Whole sample			Model 1		Model 2		Models 3 and 4	
	Obs.	Means	St. err.	Mean	S-E	Mean	S-E	Mean	S-E
No vote	5576	0.249	0.432	0.229	0.420	0.227	0.419	0.215	0.411
No car	5541	0.152	0.359	0.138	0.345	0.137	0.343	0.138	0.345
Homeless	5585	0.036	0.185	0.029	0.169	0.029	0.169	0.028	0.164
Unemployed	5498	0.293	0.455	0.279	0.449	0.278	0.448	0.268	0.443
Problems writing	5536	0.116	0.320	0.097	0.296	0.098	0.297	0.101	0.302
No phone	5531	0.077	0.267	0.072	0.259	0.070	0.255	0.069	0.254
Alcohol problems	5570	0.171	0.377	0.159	0.365	0.158	0.365	0.154	0.361
Arrears	5555	0.079	0.270	0.068	0.252	0.067	0.250	0.069	0.253
Teenage mother	8994	0.10	0.30	0.083	0.276	0.082	0.275	0.079	0.269
Father left school after 15	5688	0.22	0.41	0.202	0.402	0.202	0.401	0.189	0.391
Mother left school after 15	5853	0.21	0.41	0.205	0.404	0.204	0.403	0.196	0.397
Relative in contact with police (by 11)	9594	0.01	0.11	0.006	0.076	0.006	0.077	0.006	0.079
Parents were tenants (16)	5975	0.60	0.66	0.463	0.499	0.461	0.499	0.466	0.499
Some parental incentive for school	8021	0.32	0.47	0.149	0.356	0.149	0.356	0.152	0.359
Large parental incentive for school	8021	0.64	0.48	0.796	0.403	0.797	0.402	0.797	0.402
Always lived with both natural parents	4699	0.85	0.36	0.903	0.296	0.905	0.293	0.908	0.290
Family were at risk of financial	8526	0.39	0.49	0.012	0.108	0.012	0.109	0.011	0.103
Family had financial difficulties once or	8526	0.18	0.38	0.151	0.358	0.151	0.358	0.145	0.352
Father was at risk of unemployment	8471	0.48	0.50	0.116	0.321	0.117	0.322	0.116	0.320
Father was unemployed once or more	8471	0.10	0.31	0.102	0.303	0.102	0.303	0.101	0.301
Couple, only male working (7)	7240	0.49	0.50					0.529	0.499
Single mother working (7)	7240	0.02	0.14					0.011	0.103
Single mother not working (7)	7240	0.01	0.09					0.003	0.056
Couple, only male working (11)	6901	0.38	0.49					0.391	0.488
Single mother working (11)	6901	0.03	0.18					0.016	0.127
Single mother not working (11)	6901	0.02	0.12					0.005	0.071
Couple, only male working (16)	5764	0.31	0.46					0.296	0.457
Single mother working (16)	5764	0.05	0.22					0.026	0.160
Single mother not working (16)	5764	0.03	0.16					0.014	0.117
Mother works (7)	7294	0.50	0.50	0.474	0.499	0.475	0.500	0.468	0.499
Mother works (11)	7056	0.60	0.49	0.608	0.488	0.606	0.489	0.604	0.489
Mother works (16)	5906	0.66	0.47	0.685	0.465	0.684	0.465	0.690	0.463
Single mother (7)	7453	0.03	0.17	0.015	0.124	0.015	0.122	0.014	0.117
Single mother (11)	6956	0.05	0.21	0.024	0.153	0.024	0.153	0.021	0.145
Single mother (16)	5846	0.07	0.26	0.042	0.200	0.040	0.196	0.040	0.197
Above average at maths test score (7)	5688	0.22	0.41	0.476	0.500	0.476	0.500	0.470	0.499
Above average at reading test score (7)	5853	0.21	0.41	0.673	0.469	0.672	0.470	0.671	0.470
Settled within one month at school (7)	6953	0.69	0.46	0.710	0.454	0.711	0.454	0.708	0.455
Reported once below average knowledge	6571	0.23	0.42	0.213	0.409	0.212	0.409	0.211	0.408
Reported twice below average knowledge	6571	0.17	0.38	0.128	0.334	0.127	0.333	0.125	0.331
Has been in care	7522	0.05	0.21	0.027	0.161	0.027	0.161	0.026	0.159
Reported badly behaved by school (16)	6139	0.41	0.49	0.341	0.474	0.340	0.474	0.335	0.472
Reported badly behaved by mother (16)	5927	0.50	0.50	0.467	0.499	0.468	0.499	0.469	0.499
Referred to a social agency (16)	8133	0.15	0.36	0.130	0.336	0.129	0.336	0.123	0.328
Had contacts with the police (16)	6331	0.17	0.37	0.131	0.337	0.130	0.336	0.131	0.338
Professional & intermediate	5925	0.22	0.41					0.226	0.419
Skilled manuals	5925	0.41	0.49					0.433	0.496
Other manuals	5925	0.21	0.40					0.164	0.370

Table C.5.1 (ctd.)

	Whole sample			Model 1		Model 2		Models 3 and 4	
	Obs.	Means	St. err.	Mean	S-E	Mean	S-E	Mean	S-E
Has children	6264	0.18	0.38			0.152	0.359	0.149	0.356
Other education	8152	0.18	0.39			0.160	0.367	0.144	0.351
O levels/ Lower vocational	8152	0.20	0.40			0.222	0.415	0.225	0.417
5+ O levels/ Middle vocational	8152	0.18	0.38			0.249	0.433	0.269	0.444
A levels	8152	0.10	0.30			0.094	0.292	0.086	0.280
Highest vocational	8152	0.06	0.24			0.089	0.285	0.100	0.300
Degree	8152	0.08	0.28			0.089	0.285	0.086	0.280
Partner working	6224	0.23	0.42					0.267	0.443
Partner unemployed or OLF	6224	0.17	0.38					0.142	0.349
North	5587	0.05	0.23	0.071	0.257	0.072	0.258	0.074	0.261
North West	5587	0.11	0.31	0.088	0.284	0.087	0.281	0.086	0.281
Yorkshire & Humberside	5587	0.10	0.30	0.104	0.306	0.105	0.306	0.108	0.310
West Midlands	5587	0.09	0.29	0.093	0.290	0.093	0.291	0.093	0.291
East Midlands	5587	0.08	0.27	0.075	0.264	0.076	0.265	0.074	0.262
East Anglia	5587	0.03	0.18	0.038	0.191	0.038	0.192	0.038	0.191
South West	5587	0.09	0.28	0.091	0.288	0.092	0.288	0.090	0.286
London	5587	0.07	0.25	0.046	0.209	0.046	0.208	0.045	0.207
Wales	5587	0.05	0.23	0.069	0.253	0.069	0.253	0.069	0.253
Scotland	5587	0.09	0.28	0.101	0.302	0.102	0.303	0.100	0.300

Table C.5.2: Summary statistics for women

	Whole sample			Model 1		Model 2		Models 3 and 4	
	Obs.	Means	St. err.	Mean	S-E	Mean	S-E	Mean	S-E
No vote	5763	0.215	0.411	0.198	0.398	0.198	0.399	0.192	0.394
No car	5721	0.150	0.357	0.136	0.343	0.136	0.343	0.130	0.336
Homeless	5778	0.040	0.197	0.036	0.187	0.036	0.186	0.036	0.185
Unemployed	5688	0.225	0.418	0.240	0.427	0.239	0.427	0.231	0.422
Problems writing	5744	0.061	0.240	0.054	0.227	0.054	0.226	0.054	0.227
No phone	5730	0.072	0.259	0.065	0.246	0.065	0.247	0.058	0.234
Alcohol problems	5747	0.079	0.270	0.068	0.251	0.067	0.250	0.065	0.246
Arrears	5749	0.078	0.268	0.063	0.242	0.063	0.242	0.061	0.240
Teenage mother	8406	0.10	0.30	0.088	0.284	0.089	0.285	0.091	0.288
Father left school after 15	5404	3.93	1.63	0.201	0.401	0.202	0.401	0.197	0.397
Mother left school after 15	5579	3.95	1.40	0.208	0.406	0.208	0.406	0.201	0.401
Relative in contact with police (by 11)	8961	0.01	0.12	0.013	0.113	0.013	0.111	0.012	0.107
Parents were tenants (16)	5679	0.59	0.65	0.489	0.500	0.488	0.500	0.484	0.500
Some parental incentive for school	7507	0.31	0.46	0.155	0.362	0.155	0.362	0.153	0.360
Large parental incentive for school	7507	0.65	0.48	0.789	0.408	0.790	0.407	0.794	0.405
Always lived with both natural parents	4507	0.85	0.36	0.899	0.301	0.899	0.301	0.904	0.294
Family were at risk of financial difficulties	8040	0.38	0.48	0.011	0.106	0.010	0.102	0.010	0.099
Family had financial difficulties once or more	8040	0.18	0.38	0.164	0.370	0.163	0.369	0.160	0.366
Father was at risk of unemployment	7977	0.48	0.50	0.120	0.325	0.121	0.326	0.116	0.320
Father was unemployed once or more	7977	0.10	0.30	0.110	0.312	0.107	0.310	0.106	0.307
Couple, only male working (7)	6888	0.48	0.50					0.497	0.500
Single mother working (7)	6888	0.02	0.14					0.014	0.118
Single mother not working (7)	6888	0.01	0.08					0.002	0.048
Couple, only male working (11)	6586	0.37	0.48					0.353	0.478
Single mother working (11)	6586	0.04	0.19					0.026	0.158
Single mother not working (11)	6586	0.02	0.13					0.009	0.093
Couple, only male working (16)	5431	0.31	0.46					0.278	0.448
Single mother working (16)	5431	0.05	0.22					0.030	0.172
Single mother not working (16)	5431	0.03	0.17					0.017	0.131
Mother works (7)	6926	0.51	0.50	0.504	0.500	0.504	0.500	0.500	0.500
Mother works (11)	6702	0.62	0.49	0.637	0.481	0.637	0.481	0.638	0.481
Mother works (16)	5590	0.66	0.47	0.699	0.459	0.701	0.458	0.704	0.456
Single mother (7)	7086	0.03	0.16	0.019	0.135	0.018	0.134	0.016	0.127
Single mother (11)	6639	0.05	0.23	0.037	0.188	0.037	0.189	0.034	0.182
Single mother (16)	5530	0.08	0.27	0.049	0.215	0.049	0.216	0.048	0.213
Above average at maths test score (7)	5404	0.22	0.41	0.576	0.494	0.576	0.494	0.578	0.494
Above average at reading test score (7)	5579	0.22	0.42	0.681	0.466	0.681	0.466	0.685	0.465
Settled within one month at school (7)	6556	0.74	0.44	0.751	0.433	0.751	0.433	0.752	0.432
Reported once below average knowledge	6227	0.21	0.41	0.199	0.399	0.198	0.399	0.198	0.399
Reported twice below average knowledge	6227	0.18	0.39	0.135	0.342	0.135	0.342	0.135	0.342
Has been in care	7238	0.04	0.20	0.021	0.142	0.021	0.143	0.020	0.141
Reported badly behaved by school (16)	5929	0.34	0.47	0.296	0.457	0.293	0.455	0.292	0.455
Reported badly behaved by mother (16)	5628	0.52	0.50	0.521	0.500	0.520	0.500	0.517	0.500
Referred to a social agency (16)	7617	0.10	0.30	0.080	0.271	0.080	0.272	0.078	0.268
Had contacts with the police (16)	5878	0.06	0.23	0.044	0.206	0.044	0.206	0.043	0.203
Professional & intermediate	6085	0.21	0.41					0.216	0.411
Skilled manuals	6085	0.09	0.29					0.086	0.281

Table C.5.2 (ctd.)

	Whole sample			Model 1		Model 2		Models 3 and 4	
	Obs.	Means	St. err.	Mean	S-E	Mean	S-E	Mean	S-E
Other manuals	6085	0.20	0.40					0.180	0.384
Has children	6271	0.33	0.47			0.308	0.462	0.309	0.462
Other education	7815	0.19	0.39			0.187	0.390	0.183	0.387
O levels/ Lower vocational	7815	0.24	0.43			0.258	0.438	0.255	0.436
5+ O levels/ Middle vocational	7815	0.15	0.35			0.169	0.375	0.177	0.382
A levels	7815	0.09	0.29			0.093	0.290	0.083	0.276
Highest vocational	7815	0.07	0.25			0.091	0.287	0.100	0.300
Degree	7815	0.07	0.26			0.085	0.280	0.087	0.282
Partner working	6237	0.55	0.50					0.587	0.492
Partner unemployed or OLF	6237	0.07	0.25					0.043	0.202
North	5764	0.05	0.22	0.069	0.253	0.068	0.252	0.068	0.251
North West	5764	0.11	0.32	0.107	0.309	0.107	0.309	0.107	0.309
Yorkshire & Humberside	5764	0.10	0.30	0.085	0.279	0.085	0.280	0.085	0.278
West Midlands	5764	0.09	0.28	0.101	0.301	0.100	0.300	0.104	0.305
East Midlands	5764	0.06	0.24	0.064	0.244	0.064	0.244	0.066	0.249
East Anglia	5764	0.04	0.19	0.049	0.215	0.048	0.215	0.049	0.216
South West	5764	0.09	0.28	0.098	0.298	0.098	0.298	0.096	0.295
London	5764	0.07	0.26	0.043	0.204	0.043	0.203	0.043	0.203
Wales	5764	0.05	0.23	0.067	0.249	0.067	0.250	0.067	0.250
Scotland	5764	0.09	0.29	0.104	0.305	0.104	0.305	0.100	0.300

Chapter six

Conclusion

This thesis has studied the economic and social consequences of unemployment and long-term (or repeated) unemployment. We have used a regional panel of data on British regions in chapter two, then the British National Child Development Study (NCDS) in the three other chapters. Economic consequences have been analysed in the first two chapters and social consequences in the last two.

Many findings have been outlined throughout the thesis. We will review them in detail below, but first a general conclusion can be drawn from the research which has been carried out here. We have provided some evidence that might be used to justify intervention directed at the long-term unemployed or at preventing people from entering long-term unemployment. First, the estimated relationship between the composition of unemployment and wages has suggested that no inflationary pressure would be felt from reducing long-term unemployment. Although this finding does not give a direct reason for decreasing long-term unemployment, it suggests that there are no damaging economic consequences to doing it. Second, we have found evidence that intervention may be useful to compensate for unexpected rigidities (such as impediments to flexibility in the third chapter). Finally, we have found that the unemployment of one member of a household appears to have a detrimental impact on other members. In particular, the - repeated - unemployment of the father has a damaging effect on their children. These detrimental outcomes have been found both to occur during childhood and to have long-lasting effects. We have also been able to identify ways in which such effects could be alleviated. In particular, it is possible that improving the quality of parenting may have a role to play. Gaining educational qualifications also appears to offset these detrimental effects.

Chapter two has checked the robustness of the hypothesis that a higher proportion of long-term unemployment in the economy counteracts the dampening effect of unemployment on wages. We have used regional wage equations controlling

for regional unemployment and long-term unemployment, other regional variables such as prices and manufacturing employment, as well as time and region dummies. Our results are tested for possible misspecification. *They suggest that the Layard-Nickell hypothesis is verified for manual or unskilled workers, but not for non-manual or skilled workers.* We attribute the apparent strength of these results to the fact that we use regional data.

Chapter three is interested in the 'flexibility' of young unemployed people during job search. We define flexibility as the degree of willingness of unemployed people to consider the following choices: applying for a job which involves moving, for a job with lower pay and for a job which requires lower qualifications. As was expected, these decisions are found to be strongly positively dependent and simultaneously determined. Therefore, *using a model that incorporates this improves efficiency of the estimates*. The results show that specifications which do not take into account the simultaneity between the decisions taken during job search tend to overestimate the effect of having a partner and of the region of residence. This suggests that considering only one of the many decisions taken during job search may lead to inexact findings concerning its determinants. *We find that young unemployed people seem to be quite flexible when looking for a job. Moreover, the greater the number of previous unemployment spells, the more likely they are to have considered moving house. Past unemployment does not affect their wage and skill content expectations.* The effect of unemployment benefits goes mainly through the decision on skill content; higher unemployment benefits decrease the willingness to accept a job with a lower skill content. People who use employment services are more flexible. Other results are consistent with the following conclusions: skilled manuals appear to be constrained in moving, and there appears to be a union wage premium.

Chapter four looks at the correlation between the parental labour market situation and the social behaviour of their children. We use panel data techniques as well as cross-section discrete dependent variable models. Although it is not easy to be certain of causal channels in social science, we discover many patterns in the data. The findings show that, *controlling for - persistent - financial difficulties, the unemployment of the father during childhood seems to have a detrimental effect on his children's outcomes*. It increases the probability that they have contacts with the police or with social authorities, and that they are reported to have anti-social behaviour by the school. There is also evidence that relationships between the parents and the children may be strained. Repeated spells of paternal unemployment are found to have additional detrimental effects in most cases. On the other hand, there is some evidence that those who have a non-working mother during early childhood are better off than others, except in cases where the mother is single. We also find evidence that children, in particular girls, who come from broken families fare less well than others. Interestingly, we find that parental interest in the child's education may have a substantial offsetting (beneficial) effect.

Chapter five analyses the relation between adolescent anti-social behaviour and family background and social exclusion in adult life. We control for external environment and adult family situation. *A new index of social exclusion is constructed.* We define social exclusion as being evidenced by the combination of eight outcomes (five "economic" outcomes: having been homeless, unemployed, owning a phone, a car, having rent or mortgage arrears; and three "cultural" outcomes: having voted in the last General Election, having writing problems and having drinking problems). *We find that anti-social behaviour and social difficulties during childhood are associated with later risks of social exclusion.* This is true even controlling for given personal characteristics such as ability and temperament

(measured by early social behaviour) and for the current environment (measured by regional dummies). Educational qualifications appear to provide offsetting effects, especially for women. We also find that outcomes in early adulthood (namely at age 23) are related to future social exclusion. Being in a "disadvantageous" situation at 23 years old appears to be associated with higher probability of social exclusion in the following years.

We can conclude that there appears to be a certain degree of intergenerational transfer of difficulties. Social exclusion, which is generally viewed as the result of particular circumstances, is shown here to affect certain categories of people; in other words, people who suffered from social difficulties during their childhood are more at risk of social exclusion during adulthood. We also distinguish between economic and cultural social exclusion (defined above). Overall, those who have had anti-social behaviour and family difficulties see a greater decrease in the probability of economic integration than in the probability of cultural integration compared to those who did not suffer from those difficulties. Education offsets these negative effects especially for cultural integration. For those who had difficulties, having a partner is associated with lower economic exclusion compared to having no partner, even if their partner does not work, while the probability of cultural exclusion is slightly greater if the partner does not work.

Although it may not be possible to quantify exactly the costs of these effects to society, it seems important to recognise that these additional factors should be considered in cost benefit analysis of labour market policies. We have argued elsewhere (Pierre, 1999) that policy evaluations based only on employment and earnings effects give a partial view of the impact of labour market policies on the labour market and on agents. Social and equity aspects are also relevant to society's well-being, and are desirable by-products of these policies. The findings of this thesis

suggest a set of additional effects to look at. In particular, children's social behaviour (measured for example by crime rate), and attainment at school could be taken into account when reviewing the costs and benefits of specific government policies.

One of the weaknesses of the NCDS as far as this thesis is concerned is that it studies people born in 1958. One might argue that the results are not relevant for today's labour market. It would be interesting to study similar questions for a cohort of people born in the seventies, such as the British Cohort Study (BCS), which provides information on people born in 1970. At the moment, the BCS is not as rich as the NCDS and does not enable us to study the questions that interest us. The new 2000 releases of NCDS and BCS could be useful for further research on the topics covered in this thesis. However, we contend that our results are not outdated. They are relevant to current labour markets. For example, one can find an illustration of these issues in the UK. The national unemployment rate now appears to be low, but pockets of unemployment exist in certain areas. The latter can be particularly deprived, and generally contain a high incidence of households where no adult works. As well as the usual macroeconomic policies, specific action can therefore be considered desirable to alleviate the immediate effects of unemployment. We have shown that the latter can be long lasting, especially when unemployment spells are protracted or recurrent.

Finally, there is a need to control better for individual effects. We tackled this issue by using fixed effects models and by including early personal characteristics. The latter are assumed to be close to true personality because they may not be contaminated by contacts with peers at school. Further use of longitudinal data in the form of panel would be interesting. In addition, one could study siblings to account for the fact that people may react to similar experiences differently, but also to have greater insights on how the evolution of how family situation affects different

siblings. Twin studies could provide additional control for individual characteristics; as identical twins share the same genes, these could then be held constant.

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